Vol. 1040 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

March 6, 1984

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

March 6, 1984 Volume 1040 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

Jan. 30, 1984. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,088,424, Re. S.N. 546,420, Filed Oct. 28, 1983, Cl. 417/368, WET PICK-UP VACUUM UNIT MOTOR BEARING AIR SEAL, Robert L. Hyatt, et al., Owner of Record: *Ametek, Inc., Kent, Ohio,* Attorney or Agent: Albert L. Ely, Jr., Ex. Gp.: 343

4,318,105, Re. S.N. 568,557, Filed Jan. 5, 1984, Cl. 343/103, LORAN-C NAVIGATION APPARATUS, Lester R. Brodeur, Owner of Record: *Sanders Associates, Inc., Nashua, N.H.,* Attorney or Agent: Louis Etlinger, et al., Ex. Gp.: 222

4,371,495, Re. S.N. 568,458, Filed Jan. 5, 1984, Cl. 376/209, SELF RUPTURING GAS MODERATOR ROD FOR A NUCLEAR REACTOR, George R. Marlatt, Owner of Record: *Westinghouse Electric Corp., Pittsburgh, Pa.,* Attorney or Agent: Z. L. Dermer, et al., Ex. Gp.: 221

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,190,602, Reexam. No. 90/000,496, Requested: Feb. 2, 1984, Cl. 560/053, MONOACETALS OR AROMATIC 1,2-DIKETONES, Jean Brunisholz, et al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, Ex. Gp.: 126, Requester: Ciba-Geigy Corp., Ardsley, N.Y.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 6, 1984

Re. 31,450	4,393,318	4,403,997	4,415,222
D. 271,082	4,393,952	4,404,076	4,415,456
3,997,298	4,397,251	4,404,424	4,415,555
4,155,787	4,397,517	4,404,571	4,415,774
4,232,144	4,397,572	4,404,816	4,416,687
4,250,156	4,397,656	4,404,881	4,416,696
4,295,004	4,398,082	4,405,016	4,416,887
4,298,787	4,398,266	4,405,656	4,416,915
4,318,935	4,398,425	4,406,036	4,417,543
4,325,121	4,398,479	4,406,779	4,418,745
4,335,039	4,399,033	4,407,926	4,418,949
4,346,460	4,399,040	4,408,057	4,419,085
4,348,496	4,399,618	4,409,067	4,419,169
4,349,658	4,399,703	4,409,495	4,419,278
4,353,921	4,401,080	4,409,496	4,419,683
4,357,152	4,401,700	4,411,460	4,420,124
4,357,480	4,402,493	4,411,496	4,420,402
4,368,852	4,402,587	4,411,792	4,420,499
4,375,246	4,402,701	4,412,052	4,420,568
4,377,843	4,402,821	4,413,025	4,420,792
4,384,215	4,402,993	4,413,029	4,420,934
4,384,328	4,403,114	4,413,132	4,421,854
4,384,342	4,403,156	4,414,148	4,423,481
4,387,972	4,403,343	4,414,225	4,423,974
4,393,210	4,403,917	4,414,995	4,424,105

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 4, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-20-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-16-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-15-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	3-17-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-04-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-18-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-26-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-20-81

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,302,213 to 3,307,199, inclusive

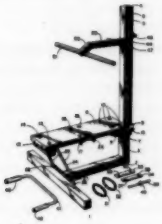
Plant Patents ..... Numbers 2,707 to 2,722 inclusive

REEXAMINATIONS

MARCH 6, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,072,309 (171st)
MULTI-PURPOSE EXERCISE DEVICE
Jerry L. Wilson, 5816 Vista Clara, El Paso, Tex. 79912
Reexamination Request No. 90/000,357, Mar. 28, 1983.
Reexamination Certificate for Patent No. 4,072,309, issued Feb. 7, 1978, Ser. No. 698,463, Jun. 21, 1976.
Int. Cl.[3] A63B *21/04*
U.S. Cl. 272—136



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **6** and **8**, having been finally determined to be unpatentable, are cancelled.

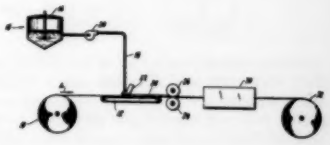
Claims **1** and **7** are determined to be patentable as amended:

Claims **2–5**, dependent on amended claims, are determined to be patentable.

New claim **9** is added and determined to be patentable.

1. Multiple purpose exercise apparatus comprising:
a frame having forward and rearward positions comprising a ground-supported base and a stationary vertical support member extending upwardly from the rear of the base, *wherein the vertical support member includes a rail having a plurality of vertically aligned bores therein,*
a bench, support means associated with said frame for maintaining the bench at a level above the base,
a lever arm pivotally attached to said vertical support member and extending outwardly over said base, *the lever arm also comprising two fingers extending from the rearward portion thereof, each finger having a bore therein axially aligned with respect to the other, the apparatus also comprising a removable pin having circular-cross section for insertion consecutively through the bore in one finger, a bore in the rail, and the bore in the other finger, thereby pivotally connecting the lever arm to the rail so that the lever arm can move freely only in a vertical plane,* [fastening means for securing the lever arm to the support member comprising a plurality of vertically aligned bores in the support member, a transverse bore carried by the rearward portion of the lever arm, and pin means extending through both bores for removably pivotally attaching the lever arm to the vertical support member such that the lever arm can move freely only in a vertical plane,]
biasing means attachable to the lever arm at a position spaced from the connection of the lever arm on the vertical support member for selectively providing resistance to upward or downward motion of the lever arm in the vertical plane, and
removable attachment means *selectively* mountable in *a bore in the rail at a location either above or below the connection of the lever arm to the rail* [the vertically aligned bores] for selectively attaching the biasing means at various [position] *positions* on the vertical support member.

B1 4,266,976 (172nd)
FABRIC TREATING COMPOSITIONS
Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.
Reexamination Request No. 90/000,270, Oct. 4, 1982.
Reexamination Certificate for Patent No. 4,266,976, issued May 12, 1981, Ser. No. 15,030, Feb. 26, 1979.
Continuation of Ser. No. 794,627, May 6, 1977, abandoned, which is a division of Ser. No. 584,389, Jun. 6, 1975, Pat. No. 4,118,526.
Int. Cl.[3] C09K *3/18*
U.S. Cl. 106—2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. In a foamable composition suitable for treating fabrics with a finishing agent comprising a fabric finishing agent in an amount effective to impart the properties of the finishing agent to a fabric, a foam stabilizer, and a liquid diluent; the improvement comprising about 0.5 to 8 percent foam stabilizer and in an amount sufficient to form said composition into a stable foam having a blow ratio in the range from about 2:1 to 20:1, a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and which is sufficiently stable to substantially retain its characteristics during application until a mechanical force is applied thereto.

6. In a stable foamed composition suitable for continuously treating fabrics with a finishing agent comprising a fabric finishing agent in an amount effective to impart the properties of the finishing agent to a fabric, a foam stabilizer and a liquid diluent; the improvement comprising about 0.5 to 8 percent foam stabilizer and in an amount sufficient to form a stable foam having a flow ratio in the range from about 2:1 to 20:1, a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and which is sufficiently stable so that upon application onto a fabric said foam composition will flow on the fabric surface and not break down until a mechanical force is applied thereto.

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 6, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,001
METHOD FOR RECOVERING GOLD FROM REFRACTORY ORES

Richard S. Kunter, 2614 S. Field St., Lakewood, Colo. 80227, and John R. Turney, 12128 W. 70th Ave., Arvada, Colo. 80004

Continuation of Ser. No. 349,149, Feb. 16, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 536,222

Int. Cl.³ C01G *7/00*

U.S. Cl. 75—118 R

No Drawing. 30 Pages Specification

A process for pretreating refractory ores improves the recovery of gold from such ores upon subsequent cyanidation. After comminuting the ore and forming an aqueous slurry, the ore is subjected to pressurized oxidation at an elevated temperature. By adjusting the pH to below about 1.85 and maintaining the pressure and temperature above 300 psig and 160° C., respectively, very high recovery of gold can be achieved. Additionally, by maintaining a preselected soluble iron concentration in the slurry, the oxidation of the ore is promoted and proceeds at a more rapid rate.

T104,002
MODULAR INSULATED CABINET CONSTRUCTION

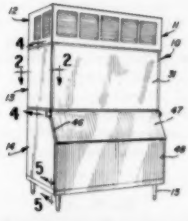
John F. Morrison, 3151 W. Owasso Blvd., St. Paul, Minn. 55112; Harold E. Jensen, 1016 Island Lake Ave., Shoreview, Minn. 55112, and Donald F. Gode, 3538 Glenarden Rd., St. Paul, Minn. 55112

Continuation of Ser. No. 71,351, Aug. 29, 1979. This application Dec. 28, 1981, Ser. No. 334,748

Int. Cl.³ A47B *81/00*

U.S. Cl. 312—214

2 Sheets Drawing. 22 Pages Specification



An insulative cabinet construction having a shell portion formed of a plurality of panels having securing portions interlocked in secured relationship. A liner is spaced inwardly of the shell structure, and foamed-in-place insulation is formed between the shell structure and liner so as to be adhered to the shell structure and liner and effectively embed the securing portions of the shell to maintain the interlocked secured relationship thereof. The interlocked portions of the shell may be crimped portions, staked portions, or stamped-together portions, as desired. The shell panels may include flanges on edge portions to provide column strength at the corners of the cabinet. The shell panels may be prefinished. Preformed closure means are provided extending between the liner and shell structure outwardly of the insulation.

T104,003
SYNCHRONOUS DATA LINK SLOW-POLL PROTOCOL

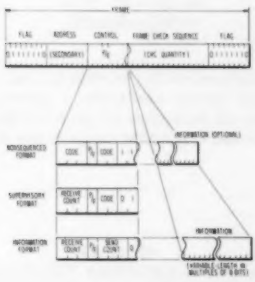
Lon E. Hall, 8413 Maine Dr., Austin, Tex. 78758, and Richard E. Eveland, 11214 Deadoak La., Austin, Tex. 78759

Filed Nov. 9, 1982, Ser. No. 440,263

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200

3 Sheets Drawing. 13 Pages Specification



A first data processor (**10**) and at least a second data processor (**11**) are connected by a data link (**12**). The processors each have a communication adapter (**14**) which is connected to the data link and system clock (**21**) which times functions within the processor. Under a synchronous data link control (SDLC) protocol which has information frames and supervisory frames, one of the processors is designated as the primary station and the other, the secondary station. Whenever supervisory frames are transmitted between the primary and secondary stations, means are operative for inserting a mandatory non-polling quiet period of a predetermined length prior to each poll so that the processor at the secondary station is freed for non-polling functions.

T104,004
TASTE IMPROVEMENT OF TABLE TOP PREPARATIONS CONTAINING ACESULFAME K

Gert-Wolfhard von Rymon Lipinski, c/o Hoechst Aktiengesellschaft P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,057

Claims priority, application Luxembourg, Sep. 3, 1982, 84363

Int. Cl.³ A23F *1/236*

U.S. Cl. 426—548

No Drawing. 13 Pages Specification

For special applications modifications of the sweetness intensity or the taste characteristics of the new non-nutritive sweetener Acesulfame K may be required. The taste of Acesulfame K can be modified using mixtures with magnesium sulphate, sodium glutamate, disodium inosinate, disodium guanylate, quinine sulphate, maltol, ethyl maltol, 2.5-dimethyl-3-hydroxy-4-oxo-4.5-dihydrofurane, or thaumatin alone or in suitable combinations, in which Acesulfame K is the main ingredient. These mixtures may be used instead of pure Acesulfame K in the following preparations. For preparing granules, powders, tablets, or solutions Acesulfame K can be mixed with potassium chloride, potassiumdihydrogen phosphate, potassium acetate, potassium hydrogentartrate, disodium hydrogenphos-

phate, trisodium citrate glucono-δ-lactone, starch syrups of low DE (=Dextrose Equivalent) values, low-viscosity carboxymethyl cellulose, and gumarabic alone or in suitable combinations. A dilution of Acesulfame K to low sweetness intensities is possible using calcium chloride, tricalcium phosphate, calcium lactate, calcium gluconate, potassium hydrogen carbonate, potassium chloride, potassium polyphosphate potassium hydrogen tartrate, sodium chloride, trisodium phosphate, disodium hydrogenphosphate, sodium gluconate, glycin, fumaric acid, citric acid, malic acid, tartaric acid, glucono-δ lacton, glucose, fructose, maltose, lactose, sorbitol, starch syrups having low to medium DE-values, gum arabic, hydrolyzed soluble casein, and soluble gelatin. The taste of the mixtures was rated superior or equivalent to the pure Acesulfame K.

REISSUES

MARCH 6, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

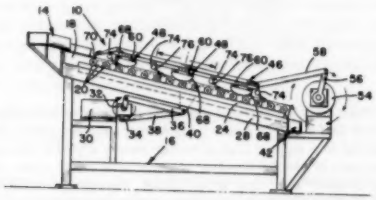
Re. 31,527
METHOD AND APPARATUS FOR EVISCERATING SCALLOPS

William R. Lambert, 750 Scallop Dr., Port Canaveral, Fla. 32920

Original No. 3,829,933, dated Aug. 20, 1974, Ser. No. 277,600, Aug. 3, 1972. Continuation of Ser. No. 96,534, Nov. 21, 1979, abandoned. Application for reissue Jul. 28, 1982, Ser. No. 402,712

Int. Cl.³ A22C *29/00*

U.S. Cl. 17—51 **5 Claims**



11. Apparatus for eviscerating shucked scallops having attached viscera comprising: a plurality of parallel rollers mounted adjacent each other in an inclined flight, means for driving at least selected ones of said plurality of parallel rollers, means for directing scallops onto the upper portion of said rollers, displaceable scrubber means mounted above said rollers for urging scallops into contact with said rollers and for distributing said scallops upon said plurality of rollers by leveling, turning and displacing scallops over the rollers, and means for displacing said scallop urging and distributing means, mounted above said plurality of rollers, longitudinally of the inclined flight of rollers for controlling the flow of scallops along the incline of flight of rollers, and further including fluid spray means mounted upon said scallop urging and distributing means mounted above said rollers for displacement therewith.

13. The method of separating edible scallop muscles from the viscera of shucked scallops comprising the steps of: placing the muscles and attached viscera on the upper surface of an inclined path formed by a plurality of parallel rollers; longitudinally reciprocating water sprays spaced above said inclined path of parallel rollers and scallop muscles for evenly distributing and leveling the scallops on the rollers by positively forcing the scallops onto the rollers and into the valleys between adjacent rollers and positively turning scallops over the rollers; pulling the viscera from the muscles by gripping the viscera in the nips between adjacent rollers by rotating the upper portions of selected rollers; and controlling the flow of muscles down the inclined path.

Re. 31,528
GRID TEE FOR SUSPENSION CEILINGS OR THE LIKE

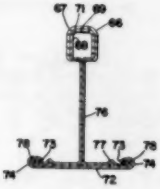
David F. Mieyal, Strongsville, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Original No. 4,206,578, dated Jun. 10, 1980, Ser. No. 929,281, Jul. 31, 1978. Application for reissue Nov. 12, 1981, Ser. No. 320,618

Int. Cl.³ E04B *5/52*

U.S. Cl. 52—730 **38 Claims**

1. An elongated grid tee for suspension ceilings or the like having a web, a bulb, and oppositely extending flanges comprising a first elongated strip of thin metal bent along its center to provide a closed bulb and extending from said bulb in face-to-face abutting adjacency to provide a central web having two abutting layers and at the edge of said web remote from said bulb bent to provide oppositely extending flanges, a cap formed of a separate second strip of thin metal secured to and extending along substantially the entire length of said flanges on the side thereof remote from said bulb, and a stiffener formed of a separate third strip of metal enclosed within said bulb, a substantial portion of said stiffener engaging the surface



of said bulb so that said stiffener and the material of said bulb cooperate to provide a substantially unitary structure, said stiffener and cap increasing the material at the extremities of said tee without increasing the thickness of said web.

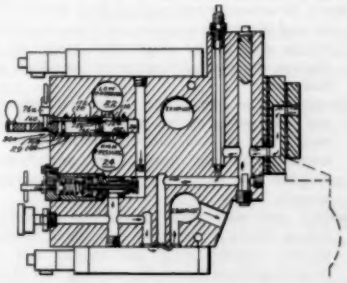
Re. 31,529
ELECTRONIC VALVE ASSEMBLY FOR GLASSWARE FORMING MACHINERY

Earl L. Lowe, Winchester, Ind., assignor to Ball Corporation, Muncie, Ind.

Original No. 4,293,004, dated Oct. 6, 1981, Ser. No. 68,276, Aug. 20, 1979. Continuation-in-part of Ser. No. 12,862, Feb. 16, 1979, abandoned. Application for reissue Jan. 15, 1982, Ser. No. 339,367

Int. Cl.³ F15B *13/08*

U.S. Cl. 137—884 **40 Claims**



33. A valve block for selectively effecting operation of respective machine elements from two supplies of fluid under different pressures, comprising first and second plenums connected to respective supplies of fluid, a plurality of valve means for selectively effecting fluid communication between two ports associated with each valve means, fluid passageway at each valve means communicating with one of said ports, an output passageway at each valve means communicating with the other of said ports, the output passageways from the valve block being adapted for connection to the machine elements, and selector means for coupling said first plenum at one pressure or said second plenum at another pressure to said fluid passageway.

Re. 31,530

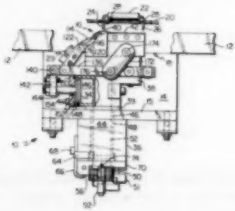
MULTIPLE LEAD CUT AND CLINCH MECHANISM

Phillip A. Ragard, Binghamton, N.Y., and Crawford A. Matson, Wyalusing, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Original No. 4,135,558, dated Jan. 23, 1979, Ser. No. 883,242, Mar. 3, 1978. Continuation of Ser. No. 773,347, Mar. 1, 1977, abandoned. Application for reissue Jan. 29, 1981, Ser. No. 229,777

Int. Cl.³ B21F *1/00*

U.S. Cl. 140—105 **10 Claims**



15. *An apparatus for cutting and clinching leads of electronic components, said leads inserted into and projecting from a circuit board, said mechanism cutting the projecting leads to trim their length and clinching the trimmed leads to said circuit board, and comprising:*

a first housing assembly raisable and lowerable along and angularly positionable about a vertical axis;

single lead means, attached to said first housing assembly for vertical and angular movement with said first housing assembly, for cutting and clinching of a single lead of aligned leads of an electronic component;

multiple lead means, attached to said first housing assembly for vertical and angular movement with said first housing assembly, for cutting and clinching of at least one other lead of said aligned leads of said component in a direction transverse to that of said single lead;

means for actuating said multiple lead means and comprising cut and clinch piston means and first cut and clinch linkage means, said cut and clinch piston means for driving said first cut and clinch linkage means to actuate said multiple lead means;

for actuating said single lead means and comprising said cut and clinch piston means and second cut and clinch linkage means, said cut and clinch piston means for driving said second cut and clinch linkage means whereby said single and multiple lead means are actuated substantially simultaneously;

vertical positioning piston means and vertically positioning linkage means for vertically raising and lowering said first housing assembly along said vertical axis, said vertical positioning piston means for actuating said vertical positioning linkage means to raise and lower said first housing assembly; and

means for angularly positioning said first housing assembly, whereby said multiple lead means is angularly positioned about said vertical axis to receive said other lead.

16. *An apparatus as in claim 15, wherein said vertical positioning linkage means is of adjustable length such that vertical raising and lowering of said first housing assembly is variable.*

17. *An apparatus as in claim 15, wherein said single lead means comprises a shaft having a beveled cutting and clinching end, said shaft received within a bore in said first housing assembly.*

18. *An apparatus as in claim 15, wherein said means to angularly position, to vertically raise and lower, and to actuate include linear actuator means.*

Re. 31,531

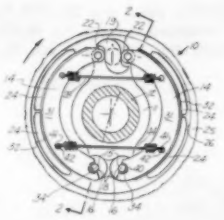
BRAKE ASSEMBLY

William J. Williams, Franklin, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 4,206,834, dated Jun. 10, 1980, Ser. No. 791,368, Apr. 27, 1977. Continuation-in-part of Ser. No. 687,063, May 17, 1976. Application for reissue Jun. 22, 1981, Ser. No. 276,065

Int. Cl.³ F16D *65/09*

U.S. Cl. 188—341 **18 Claims**



1. A brake shoe *for a brake assembly of the type including a brake drum and a pair of brake shoes having adjacent ends pivotally mounted to a support and actuating means disposed between the other ends of the brake shoes to pivot said brake shoes into frictional contact with said brake drum thereby developing a circumferential force which complements the force actuating one shoe and a circumferential force opposite to the force actuating the other shoe, said shoe* including at least one continuous rigid web having an open ended recess at one end, said recess being of a width to radially, slidably engage a cylindrical bearing surface of an anchor pin mounted to a support on a vehicle axle [housing] and being [oriented] *adapted* to pivot about said cylindrical bearing surface of said pin in response to an outwardly directed *brake actuating* force applied at the other end of said brake shoe [and]. *said recess having an inner arcuate surface in bearing abutment with said bearing surface of said pin and being oriented to extend on both sides of a plane passing through the axis of curvature of said bearing surface and parallel to a major axis of said brake assembly which passes through the center of said actuating means, said arcuate surface intersecting said plane on the side of the axis of curvature of said bearing surface remote from said actuating means and said portion of said arcuate surface which lies on the side of said plane opposite to the major part of the web extending between 5° and 30° therebeyond* to [abut] *maintain said arcuate surface in abutment with* said [cylindrical] bearing surface and prevent *substantial* movement *other than pivotal movement* of said brake shoe *relative to said anchor pin* in response to a *drum derived* force tending to move said brake shoe away from said anchor pin.

Re. 31,532

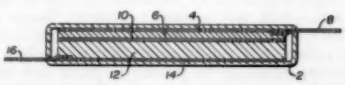
PRIMARY CELLS AND IODINE CONTAINING CATHODES THEREFOR

Alan A. Schneider, Baltimore, Md., and James R. Moser, Shrewsbury, Pa., assignors to Catalyst Research Corporation, Baltimore, Md.

Original No. 3,674,562, dated Jul. 4, 1972, Ser. No. 106,657, Jan. 15, 1971. Application for reissue Jun. 3, 1981, Ser. No. 270,216

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **12 Claims**



1. A plastic cathode consisting essentially of a mixture of iodine and a charge transfer complex of iodine with an organic

donor component selected from the group consisting of poly-2-vinylquinoline and poly-2-vinylpyridine the mixture containing between about 2 and 15 molecules of iodine for each atom of nitrogen.

Re. 31,533

INFORMATION CARRYING DISCS

Terry W. Lewis, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Original No. 4,296,158, dated Oct. 20, 1981, Ser. No. 117,466, Feb. 1, 1980. Application for reissue Dec. 3, 1982, Ser. No. 446,635

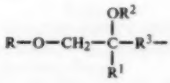
Int. Cl.³ B32B *3/02*

U.S. Cl. 428—65 **16 Claims**

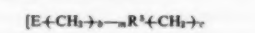
1. An information-carrying element comprising a substrate having adhered to at least one surface thereof a separate layer having a maximum thickness of from 1.0 to 100 μm and a circular or spiral pattern of grooves with or without modulations, depressions, protuberances, said separate layer comprising a polymer layer derived from 15 to 100% by weight of at least one polyacryloyl-containing heterocyclic wherein said heterocyclic is selected from the formulae:

$$A^1—Z—A^2 \quad (1)$$

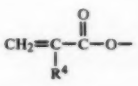
wherein A^1 and A^2 independently are alkoxyalkyl groups having terminal ethylenic unsaturation and having the formula



wherein R—O— is a monovalent residue of an aliphatic terminally unsaturated primary alcohol, ROH, formed by the removal of the active hydrogen from the primary —OH group, R having the formula:



wherein E is



b is zero or an integer of from 1 to 6,

c is an integer of from 1 to 6,

R^1 and R^4 are independently selected from hydrogen and methyl,

R^5 is an aliphatic group having from 1 to 15 carbon atoms, and no more than two catenary oxygen or carboxy groups, a valence of m+1.

m is an integer of from 1 to 5,

R^2 is selected from hydrogen and groups of the formula

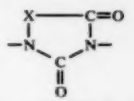
wherein

R^6 is selected from alkyl and alkenyl groups

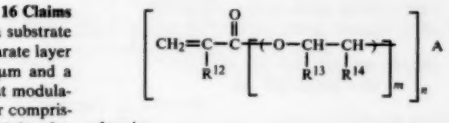
R^7 is an aliphatic or aromatic group of up to eight carbon atoms,

R^3 is an alkylene group of from 1 to 6 carbon atoms with up to one catenary oxygen atom, and

Z is a heterocyclic group of the formula



wherein X is a divalent group which is required to complete a 5- or 6-membered heterocyclic ring, or



(2)

wherein

R^{12} and R^{13} independently represent hydrogen or methyl,

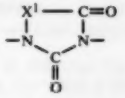
R^{14} represents hydrogen, an alkyl group, or a phenyl group,

R^{13} and R^{14} together may represent trimethylene or tetramethylene group,

m represents a number of from 1 to 30,

n is 2 or 3, and

A represents a group of the formula



wherein X^1 represents the divalent radical necessary to complete a 5- or 6-membered heterocyclic ring group[, said process comprising exposing said composition to radiation while the composition is in the presence of an atmosphere of at least 2% by volume of oxygen to polymerize said components having formula (1) or (2)].

Re. 31,534

COMMUNICATION SYSTEM CONFERENCING ARRANGEMENT

Francis M. Fenton, Middletown; James H. Van Ornum, Hazlet; Tse L. Wang, Holmdel, and Carl D. Weiss, Little Silver, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 4,150,259, dated Apr. 17, 1979, Ser. No. 847,216, Oct. 31, 1977. Application for reissue Aug. 30, 1982, Ser. No. 412,873

Int. Cl.³ H04M *1/00*

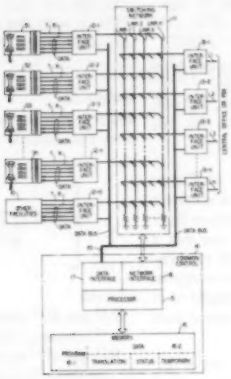
U.S. Cl. 179—99 R **10 Claims**

7. [The invention set forth in claim 6 further comprising] *In a communication system having a plurality of stations each having capability of communicating with other stations over communication links internal to the system as well as having the capability of communicating with stations external to the system over communication lines extended between the system and a central source, an arrangement for establishing conference connections between at least three stations each station having a plurality of nonlocking buttons operable to establish features or communication connections to said station,*

a switching network having a plurality of communication paths with a single communication path extended to each said station from said switching network,

means including the designation of one of said buttons at each said station as a conference control button responsive to the operation of said conference control button followed by the operation of a button associated with an idle system facility for connecting said system facility in common with already active system facilities connected to said station, and means

responsive to the operation of said conference control button followed by the operation of a button associated



with a currently active communication path for disassociating said communication path from said network.

PLANT PATENTS

GRANTED MARCH 6, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,199

LILY NAMED ROSARIO

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 421,901
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Oriental hybrid lily cultivar, substantially as herein shown and described, characterized by its large pink outwardly facing flowers, the petals of which are recurved slightly and have numerous maroon spots on the basal half, the flowers being borne on strong still outwardly projecting pedicels and the blooms being long lasting whether on the plant or as cut flowers.

5,200

LILY NAMED WHITE DREAM

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 422,203
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Oriental Hybrid lily plant substantially as herein shown and described, characterized by its large, white, slightly down-facing flowers borne on long, strong, outwardly projecting pedicels having petals that are moderately covered with red spots and recurve slightly at their tips, by its dark green and relatively disease-free foliage, and by blooms that are relatively long lasting whether on the plant or as cut flowers.

5,201

LILY NAMED PINK SENSATION

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 422,201
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Oriental Hybrid lily, substantially as herein shown and described, characterized by its large generally pink outwardly facing flowers having white edged recurved petals moderately covered with dark maroon spots, the flowers being borne on long, strong outwardly and upwardly projecting pedicels and long lasting whether on the plant or as cut flowers and the foliage is dark green.

5,202

CHRYSANTHEMUM PLANT(FLASH)

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 29, 1982, Ser. No. 343,923
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., known by the cultivar name Flash, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; bronze ray floret color, with minimum color oxidation; diameter across face of capitulum ranging from 70 to 80 mm. at maturity; uniform eight week photoperiodic flowering response to short days; long peduncle length; medium plant height when grown single stem; 10 to 20 cm. peduncles on open, normally terminal sprays; slow development of tight green discs, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

PATENTS

GRANTED MAR. 6, 1984

ERRATA

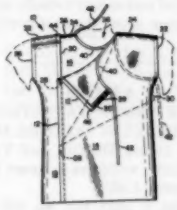
For CLASS	See PATENT NO.
409–109	4,435,105
502–157	4,435,312
502–101	4,435,313
502–154	4,435,314
548–473	4,435,323
528–493	4,435,337
381–044	4,435,617
381–007	4,435,618

PATENTS

GRANTED MARCH 6, 1984

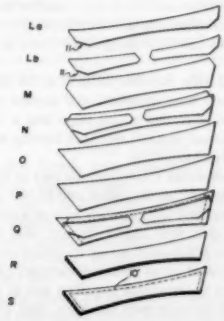
GENERAL AND MECHANICAL

4,434,511
HOSPITAL GOWN
Georgiann Weiser, Dallas, Oreg., assignor to Weiser Designs, Ltd., Amity, Oreg.
Filed Jan. 24, 1983, Ser. No. 460,451
Int. Cl.³ A41B *9/00*
U.S. Cl. 2—114 **6 Claims**



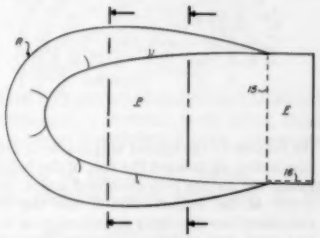
1. A gown for hospital patients and the like comprising; a first front panel portion having a starting end edge adapted to be located at the front of one side of the patient and extending across the front of the patient to the other side, a back panel interconnected with the first front panel portion at said other side and adapted to extend across the back of the patient to said one side, and a second front panel portion interconnected with the back panel at said one side and extending to said starting end edge of the first panel portion and forming thereat an ending end edge; said back panel and first front panel portion having interconnected upper edge sections adjacent said other side to form a first shoulder portion, and said back panel having an upper edge section adapted to engage an upper edge section of each of the first and second front panel portions adjacent to starting and end edges thereof, and releasable fastening means for releasably fastening the end edges together and the upper edges of the front panel portions to the back panel to thereby form a second shoulder portion.

4,434,512
STAYLESS SHIRT COLLAR
Vagn A. Hansen, Prescott, Canada, assignor to Warnaco of Canada Limited, Prescott, Canada
Filed Jul. 30, 1981, Ser. No. 288,362
Claims priority, application Canada, Oct. 10, 1980, 362244
Int. Cl.³ A41B *3/00*
U.S. Cl. 2—129 **9 Claims**



1. A stayless shirt collar cape having a base edge for attachment to a collar band, a finished free edge substantially parallel with said base edge, and two relatively short finished leading edges extending outwardly from the base edge to the free edge to form points, said cape comprising exterior shells with an interlining disposed therebetween, stiffening material disposed between the shells and secured to the interlining, the stiffening material being in the form of at least one patch extending from the points along the free edge in a longitudinal direction of the cape and along the leading edges in a transverse direction of the cape to coincide with a substantial area of the cape between the leading edges, the stiffening material being relatively stiff in the transverse direction of the cape and relatively flexible in the longitudinal direction of the cape.

4,434,513
INFANT HEAD PROTECTOR
Marilyn L. Welch, Aurora, Colo., assignor to Gold, Inc., Denver, Colo.
Filed Nov. 13, 1981, Ser. No. 321,245
Int. Cl.³ A42B *1/06*; A47C *27/00*; B60R *7/00*
U.S. Cl. 2—410 **15 Claims**



1. A protector for surrounding the head of an infant, comprising:
a panel which an infant may engage;
a roll attached to and extending around one end and at least a portion of each side of said panel, said one end of said panel being convexly curved and said roll following such curvature of said panel and being constructed and arranged to surround the head of an infant;
said roll being formed of an outer layer surrounding a resilient but compressible material;
said roll extending with a generally similar transverse dimension around said one end and along the sides of said panel to a predetermined position; and
the transverse dimension of the sides of said roll decreasing from said predetermined position to a position spaced from the opposite end of said panel.

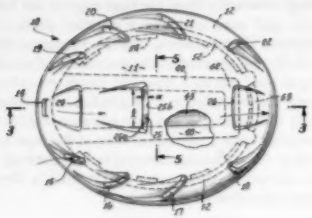
4,434,514
BICYCLISTS HELMET WITH AIR FLOW AND PERSPIRATION CONTROL
James G. Sundahl, Irvine, and Lester V. Broersma, Bellflower, both of Calif., assignors to Bell Helmets Inc., Norwalk, Calif.
Filed Jan. 7, 1982, Ser. No. 337,815
Int. Cl.³ A42C *5/04*; A42B *3/00*
U.S. Cl. 2—425 **28 Claims**

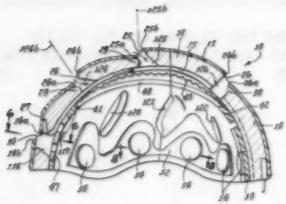
1. In a forwardly extending protective helmet, the combination including
(a) an outer shell containing distributed openings located inwardly of a dome defined by the shell outer surface through which air streams may enter the helmet, said openings defined by transversely elongated, narrow slits

of substantially constant width along the lengths of the openings,

(b) a liner in said outer shell and supporting same adjacent said openings,

(c) the liner forming left and right air flow channels communicating with said openings, the channels openly facing





the interior of the helmet lengthwise of said channels for conducting air toward the rear of the helmet,

(d) each slit having two elongated edges, one of which is closer to the helmet interior than the other, the liner extending into proximity to said edges at the inner side of said shell and forming additional through openings in registration with said slits.

4,434,515

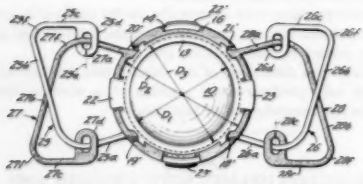
INTRAOCULAR LENS

Stanley Poler, New York, N.Y., assignor to Lynell Medical Technology Inc., New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,037

Int. Cl.³ A61F 1/16, 1/24

U.S. Cl. 3—13 **24 Claims**



1. As an article of manufacture, an optically finished intraocular lens element having a generally circular periphery about its optical axis, and a mounting adapter for said lens element, said adapter comprising two circumferentially continuous annular body members having a circular inner edge of diameter less than the diameter of said lens element, said body members being adjacent opposite axial sides of the peripheral region of said lens element and being connected to each other within a geometrical annulus radially outside said lens element, and a plurality of angularly spaced lens-positioning foot elements having cantilevered radially compliant connection to at least one of said body members; a first of said foot elements having a radially outward root portion connected at one end to its body member and having an angularly offsetting intermediate portion integrally connected at one end to the other end of said root portion, and said foot element having a radially inward end portion integrally connected at one end to the other end of said intermediate portion, whereby said radially outward root portion and said radially inward end portion are at angular offset from each other; a second of said foot elements having a radially outward root portion connected at one end to its body member at substantially the location of such angular offset; and interengaging means formed integrally with one of said first and second foot elements and establishing generally radially guided displacement of part of said radially inward end portion of said first foot element along the root portion of said second foot element.

4,434,516

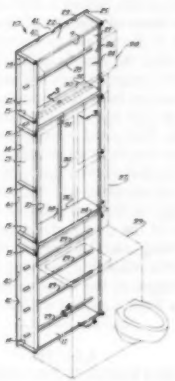
WALL SLEEVE AND INSTALLATION JIG FOR MULTIPLE ADJACENT FIXTURE MOUNTING

Earl L. Morris, La Habra Heights, and V. Walter Hafner, Whittier, both of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Jan. 5, 1983, Ser. No. 455,746

Int. Cl.³ A47K 4/00; E03D 11/00

U.S. Cl. 4—252 R **12 Claims**



1. A wall sleeve and installation jig having multiple adjacent fixtures mounted thereon comprising:

a horizontal base member having a chase edge and a cell edge and a web therebetween, said base member having a flange positioned along its chase edge;

a first vertical side member affixed at its bottom to one end of said base member, said first side member having a chase edge and a cell edge and a web therebetween, said first vertical member having a flange positioned along its chase edge;

a second vertical side member affixed at its bottom to the other end of said base member, said second side member having a chase edge and a cell edge and a web therebetween, said second vertical member having a flange positioned along its chase edge;

a horizontal top member affixed at one end to the first vertical side member and at the other end to the second vertical side member, said top member having a chase edge and a cell edge and a web therebetween, said top member having a flange positioned along its chase edge;

a least one horizontal cross channel member affixed at one end to said first vertical side member and at its other end to said second vertical side member, said cross channel member having a chase edge and a cell edge, said cell edge of said cross channel member having a cell flange positioned on the plane formed by the cell edges of said hori-

zontal base member, said first and second vertical side members and said horizontal top member, the vertical position of said cross channel being such that the cell flange is located at the intersection of the fixtures mounted on the jig;

a bottom rectangular fixture mounted on said jig, the upper edge of said bottom fixture lying along the cell flange of a cross channel, the lower edge of said bottom fixture lying below the surface of said horizontal base member; and

a top rectangular fixture mounted on said jig, the lower edge thereof being adjacent the cell flange of a cross channel, the upper edge of said top fixture lying above the surface of said horizontal top member.

4,434,517

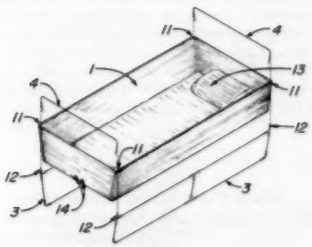
INVALID'S BATHTUB

Gordon L. Dorris, 2445 Mobile Dr., Boise, Id. 83709

Filed Apr. 26, 1982, Ser. No. 371,920

Int. Cl.³ A47K *3/06*

U.S. Cl. 4—585 **2 Claims**



1. An invalid's bathtub comprising:

a supporting framework having a pair of side frames and a pair of end frames, said side frames each including a pair of vertically spaced horizontal members connected at opposing ends by a pair of vertically spaced end members, said end members each provided at their uppermost opposing terminal ends with a pin-socket joint member; and each of said end frames including at least one horizontal member provided at opposing ends with a mating pin-socket joint member temporarily engagable with a respective pin-socket joint member of each of the end members of each of said side frames to produce a boxlike framework; and

a watertight, flexible liner having a bottom section, two opposing side wall sections and two opposing end wall sections defining a boxlike reservoir when in use, said liner provided with a pair of side panels, each of said side panels connected at its sides and top to a respective side wall section of said liner to define a bottom opening pocket adapted to slip over and be held in place by respective side frame of said supporting framework, without fasteners, and said liner provided with openings for accommodating respective pins of said pin-socket joint members.

4,434,518

SPORT SHOES

Morio Watanabe, Sakai, Japan, assignor to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 120,952, Feb. 13, 1980, Pat. No. 4,335,528. This application Mar. 2, 1982, Ser. No. 353,799

Claims priority, application Japan, Jul. 30, 1979, 54-97905

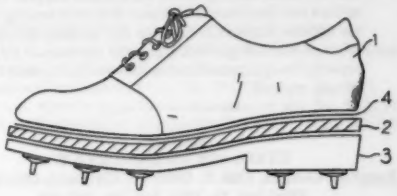
Int. Cl.³ A43C *13/08;* **A43B** *13/12, 5/00*

U.S. Cl. 12—142 RS **7 Claims**

1. A process for making a sport shoe comprising the steps of:

(a) forming a shoe upper made of natural or artificial leather;

(b) separately from said shoe upper, preparing an integrally laminated shoe sole by placing into an injection mold a preformed insert material layer made of a material which does not undergo thermal deformation at injection-molding temperatures and pressures and which displays good bondability to the shoe upper, said material being selected from the group consisting of natural leather, artificial leather, rubber, nonwoven fabric, felts, and fibers, and then injecting a molten synthetic resin into said mold so as



to form a monolithic synthetic resin layer which is bonded to the lower surface of said insert material layer and then solidifying said synthetic resin whereby to obtain said integrally laminated shoe sole;

(c) removing said shoe sole from said injection mold; and

(d) bonding the upper surface of said insert material layer to the lower portion and insole of said shoe upper with an adhesive.

4,434,519

APPARATUS FOR CLEANING SUBMERGED SURFACES

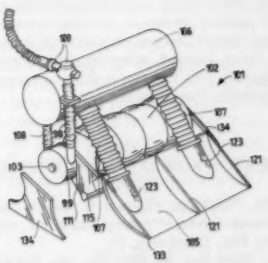
Johann N. Raubenheimer, Bedfordview, South Africa, assignor to Peacock Investments (Proprietary) Limited, Johannesburg, South Africa

Filed Sep. 28, 1981, Ser. No. 306,616

Claims priority, application South Africa, Sep. 30, 1980, 80/6049

Int. Cl.³ E04H *3/20*

U.S. Cl. 15—1.7 **8 Claims**



1. Apparatus for cleaning a submerged surface (**118**) comprising:

(a) a housing (**99**);

(b) an outlet (**98**) from the housing adapted to be connected to a suction box (**109**) which connects with a source of section;

(c) an inlet (**123**) to the housing arranged to face the submerged surface so that when suction is applied to the outlet the apparatus is biased towards the surface;

(d) a shaft (**103**) journalled for rotation in the housing;

(e) a turbine having a series of blades (**104**) mounted on the shaft adapted to be rotated by uninterrupted flow of liquid from the inlet to the outlet through the housing;

(f) carrying structure (**111**) separate from the housing;

(g) at least one friction support (115) mounted on the carrying structure for engaging the submerged surface; and

(h) means (110) connecting the shaft to the carrying structure to cause the carrying structure to reciprocate relative to the housing to thereby generate reciprocating forces oblique to the surface and alternately acting through the friction support in two opposed directions, the force in a first direction tending to lift the friction support from the surface and the force in a second direction tending to push the friction support back onto the surface, the resulting effect of said oblique forces and the bias caused by suction causing the apparatus to advance over the surface in a step by step manner.

4,434,520

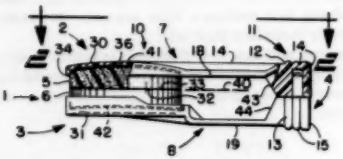
EYEGLASS WIPING DEVICE

Joseph E. Caniglia, 5368 E. 134th St., Cleveland, Ohio 44125

Filed Sep. 11, 1981, Ser. No. 301,310

Int. Cl.³ G02C *13/00*

U.S. Cl. 15—214 **17 Claims**



1. An apparatus for cleaning lenses or the like, comprising wiping means for wiping a lens, support means for supporting said wiping means, and adhesive means for attaching said wiping means to said support means wherein said support means further comprising a pair of support platforms for supporting at least two wiping means, a pair of arms and connector means, said arms respectively coupling said support platforms with said connector means, and said connector means comprising means for connecting said support means to support said wiping means in opposed relation to each other to wipe a lens, including a protruding member associated with one of said support means a receptacle associated with the other of said support means, at least one of said member and receptacle being tapered, whereby upon forced insertion of said member into said receptacle the two cooperate to form a secure connection therebetween.

4,434,521

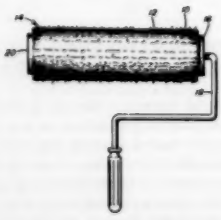
APPLICATOR FOR APPLYING A COATING TO A SURFACE

Emil Martin, Pittsburgh; Herbert W. Barch, Natrona Heights, and S. Thomas Greer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 30, 1982, Ser. No. 393,916

Int. Cl.³ B05C *17/00, 17/02*

U.S. Cl. 15—230.11 **17 Claims**



1. A coating applicator comprising:

a. a core having an inner and outer surface surface, where the core is adaptable for being held;

b. a mat of one or more glass fibers engaged to the outer surface of the core, where the one or more glass fibers have on a substantial portion of their surface the dried residue of a treating composition of a carrier, film forming polymer, and compatible coupling agent.

4,434,522

KNIFE SCRAPER FOR DRUMS, PARTICULARLY THE DRUMS OF A CYLINDER MILL

Robert Linzberger, Abtwil, Switzerland, assignor to Gebruder Buhler AG, Uzwil, Switzerland

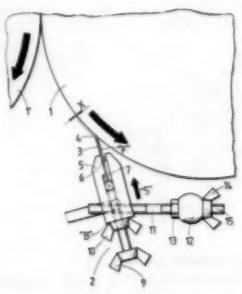
PCT No. PCT/EP81/00049, § 371 Date Dec. 11, 1981, § 102(e) Date Dec. 11, 1981, PCT Pub. No. WO81/03289, PCT Pub. Date Nov. 26, 1981

PCT Filed May 19, 1981, Ser. No. 330,312

Claims priority, application Switzerland, May 10, 1980, 3913/80; Fed. Rep. of Germany, Jun. 25, 1980, 3023824

Int. Cl.³ B02C *4/40*

U.S. Cl. 15—256.51 **9 Claims**



1. A knife scraper for a drum having an axis, particularly for the drum of a cylinder mill, comprising:

a knife having a cutting edge and knife surface;

a bendable knife beam on which said knife is mounted, said knife and knife beam being elongated in the axial direction of said drum;

means pivotally mounting said knife beam for pivotal movement about a pivot axis substantially parallel to said drum axis;

counterweight means operatively associated with said knife beam for pressing the knife on said drum, said counterweight means and said knife being spaced from said pivot axis; and

a plurality of tension elements connected to said knife beam along the length of said knife beam and upon which said counterweight means are mounted wherein said knife beam is selectively elastically bendable under the influence of force applied to said tension elements, said knife being positioned relative to said drum such that said entire cutting edge is pressed against said drum by said tension elements.

4,434,523

DOOR HINGE FOR FURNITURE DOORS OR THE LIKE

Alfred Grass, Konsumstrasse 20, A-6973 Höchst, Austria

Filed Jul. 20, 1981, Ser. No. 285,265

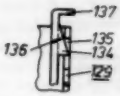
Claims priority, application Austria, Nov. 14, 1980, 5623/80

Int. Cl.³ E05D *7/04*

U.S. Cl. 16—242 **6 Claims**

1. An improved semi-concealed door hinge for mounting between a frame and a door wherein the door has a receiving slot portion that is open to a back side thereof which comprises, a socket part adapted to fit in the slot portion of the

door, means for securing said socket part in position within the slot portion, a connector plate, a swing arm extending from said connector plate and swingably connected to said socket part for door opening and closing movements with respect to the frame, an adjustment plate having spaced-apart wedge-shaped projecting portions on a face thereof, said connector plate having offset portions in a cooperatively aligned and engaging relation with said wedge-shaped projecting portions, one of said plates having opposed side-positioned flange means positioned along opposite side edges of the other of said plates



for accurately aligned sliding adjusting movement between said plates to move said adjustment plate on said wedge-shaped projecting portions in an "in" and "out" relation with respect to said connector plate and provide lateral adjustment of the door with respect to the frame, single screw means adapted to extend through said connector and adjustment plates for securing them in an adjusted relation with respect to each other on the frame in such a manner that the door may be adjusted and retained in a parallel relation with respect to the frame and said adjustment plate being rotatably adjustable with respect to said connector plate.

4,434,524

MAGNETIC DOOR HARDWARE

Henry R. Gilchrist, Burlington, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed Apr. 20, 1982, Ser. No. 370,113

Int. Cl.³ E05D *11/00, 11/10;* **E05F** *1/14*

U.S. Cl. 16—250 **10 Claims**

1. Magnetic door hardware for a swinging door, said hardware comprising in combination:

a door mounting post to which one side of said door is affixed, said post having an upper end and a lower end;

a door frame around the periphery of said door, said frame comprising at least a header member above said door and a vertical side jamb member parallel to and adjacent said one side of said door affixed to said door mounting post;

means for rotatably connecting said post to said side jamb member so as to allow said door to rotate to the open or closed position; and

magnetic means for urging said door to rotate from open position back to closed position;

said magnetic means comprising a first permanent magnet attached to one end of said door post so as to rotate therewith; a second permanent magnet affixed to said door frame so as to be aligned with and adjacent said first magnet; and a first magnetic field, associated with said first magnet, interacting with a second magnetic field associated with said second magnet, so that when said first magnet rotates relative to said second magnet, a radial torque results that urges said door to rotate to the closed position.

4,434,525

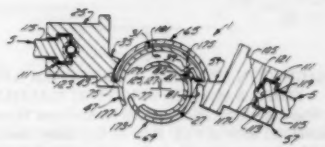
HINGE HAVING OPEN CURVED PORTIONS

Henri M. R. Labelle, Cornwall, Canada, assignor to Martinray Industries Ltd., Cornwall, Canada

Continuation-in-part of Ser. No. 141,277, Apr. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 917,154, Jun. 20, 1978, abandoned. This application Apr. 1, 1982, Ser. No. 364,312

Int. Cl.³ E05D *1/04*

U.S. Cl. 16—355 **9 Claims**



1. A hinge having first and second elongated hinge members; the first hinge member having a base portion and a curved guide spaced from one side of the base portion; a long, curved, first arm extending from the one side of the base portion in one direction about the curved guide and concentric therewith; a web, spaced inwardly from the free end of the first arm, connecting the curved guide to the first arm; a short, curved second arm extending from the one side of the base in an opposite direction to the first arm; the second hinge member having a base portion with a long, curved, third arm extending from one side of the base portion in one direction and a long curved fourth arm extending from the one side in the opposite direction to the third arm; the third and fourth arms curving toward each other and having a gap between their free ends, the first and second hinge members adapted to slidably interconnect with the curved guide located within the fourth arm, the fourth arm located within the first and second arms, and the first arm located within the third arm; the arms having a length such that with the interconnected hinge members in a closed position, with the base portions located on the same side of the curved guide, the third arm slightly overlaps the first arm; and with the interconnected hinge members in an open position, with the base portions nearly aligned on opposite sides of the curved guide, the second arm slightly overlaps the fourth arm.

4,434,526

DEVICE FOR SEPARATING AND PROCESSING THE GIZZARDS OF SLAUGHTERED POULTRY

Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT BV, Netherlands

Filed Feb. 10, 1982, Ser. No. 347,531

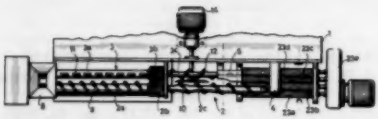
Claims priority, application Netherlands, Mar. 4, 1981, 8101055

Int. Cl.³ A22C *21/00, 21/06*

U.S. Cl. 17—11 **6 Claims**

1. A device for separating gizzards from the connected intestines of slaughtered poultry comprising side-by-side parallel synchronously counter-rotating elongated substantially cylindrical bar elements, a continuous spiral raised conveyor element for gizzards on one of said bar elements turning therewith, plural circumferentially equidistantly spaced longitudinal rows of ribs on the other bar element, the ribs in the rows being equidistantly spaced longitudinally and being of equal lengths and being adapted to enter into spaces between adjacent con-

volutions of said spiral raised conveyor element, the tips of said ribs wipingly contacting the cylindrical surface of the rotating bar element having the spiral raised conveyor element thereon, the engaging surfaces of the ribs and the rotating bar element having the spiral raised conveyor element thereon being



adapted to mutually yield during engagement elastically, means at the upstream ends of said bar elements to deliver gizzards with attached intestines onto the upstream ends of the bar elements, and means at the downstream ends of the bar elements to complete the separation of gizzards from the intestines.

4,434,527

SAUSAGE SKIN STORAGE AND FEEDER APPARATUS FOR A SAUSAGE STUFFING MACHINE

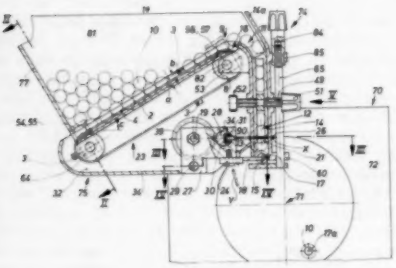
Georg Staudenrausch, Rissegg, and Hans-Ernst Weerth, Winterstettenstadt, both of Fed. Rep. of Germany, assignors to Albert Handtmann GmbH & Co., Biberach, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 265,897

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019981

Int. Cl.³ A22C *11/00*; B65G *41/12*

U.S. Cl. 17—33 **20 Claims**



1. A sausage skin storage and feeder apparatus for a sausage stuffing machine, comprising a storage container for storing a plurality of layers of sausage skins folded bellows-fashion in their longitudinal direction, said storage container having a bottom wall, power-operated conveyor means for slowly advancing the lowermost layer of sausage skins in said container transversely of their length over a distance corresponding to a multiple of their diameter in a first direction along the bottom wall of the storage container toward a withdrawal location at the end of the container, the bottom wall of the container being upwardly inclined in the first direction at an angle to the horizontal at least equal to a flow angle permitting the sausage skins overlying the lowermost layer to roll backwards in said container in a second direction opposite said first direction, a chute extending from said withdrawal location to a location adjacent a stuffer barrel for receiving the lowermost layer of sausage skins from the conveyor means and for storing a plurality of sausage skins, means for dispensing individual sausage skins from the chute and for mounting them one at a time on the stuffer barrel, and means in said container adjacent said withdrawal location for removing surplus sausage skins and causing them to be conveyed in said second direction in said container when said chute is filled with sausage skins.

4,434,528

PROCESS AND APPARATUS FOR MAKING PARTIALLY FILLED AIR-FREE SAUSAGE CASINGS

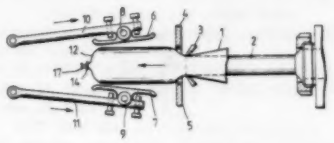
Herbert Niedecker, Am Ellerhang 6, D 6240 Königstein 2, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,264

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121101

Int. Cl.³ A22C *11/02*

U.S. Cl. 17—49 **6 Claims**



1. In the filling of a sausage casing initially closed at one end and closing the second end of the casing on a machine having filling means and means for closing the casing, wherein the casing is filled to less than its entire volumetric capacity and thereafter is closed at its second end, the improvement which comprises first tightly filling the casing beginning with the first end, when the desired amount of filling has been supplied compressing the casing laterally between its two ends while permitting the casing to advance forwardly to provide additional casing material to accommodate the filling displaced by the compression, the additional casing material sliding past the locus of partial closure, and thereafter closing the second end.

4,434,529

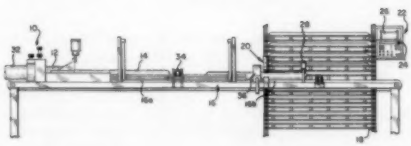
SAUSAGE DIAMETER MONITORING APPARATUS AND METHOD

Ronald W. Jensen, Chicago, Ill., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Oct. 13, 1981, Ser. No. 310,776

Int. Cl.³ A22C *11/00*

U.S. Cl. 17—49 **17 Claims**



10. A method for monitoring the difference of the diameter of sausages from a selected standard diameter, as the sausages are carried by a conveyor away from the sausage stuffing apparatus, the method comprising:

contacting the surface of a sausage as the sausage moves along the conveyor with a sausage contact member which is mounted at a fixed position along the conveyor but is movable toward and away from the conveyor;

detecting the change in position of the contact member as the sausage diameter differs;

numerically displaying the difference between the sausage diameter and the selected standard diameter; and

triggering said numerical displaying step, said triggering step including contacting an end of the sausage at a location along the conveyor that is spaced from the sausage contact member by a selected distance.

4,434,530

PROCESS FOR THE PRODUCTION OF HIGHLY SHRINKABLE SPLIT TOWS OF ACRYLONITRILE POLYMERS

Ralf Miessen; Hans Wilsing, and Fritz Schultze-Gebhardt, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 241,199

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010045

Int. Cl.³ D01G *1/08;* D01F *6/18*

U.S. Cl. 19—0.46 10 Claims

1. An improved process for the production of high-shrinkage stretch-broken tows of acrylonitrile polymers by spinning, drawing and stretch breaking in the usual way, comprising fixing with saturated steam at maximum temperature of 140° C. after drawing and before stretch breaking and stretch breaking at a draft of at least 30% whereby the resultant stretch broken yarn has a shrinkage of at least 30%.

4,434,531

APPARATUS FOR CONTROLLING THE WORKING CONDITIONS IN A PROCESSING MACHINE OF THE STAPLE FIBER SPINNING PLANT

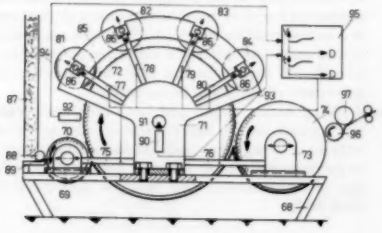
Giancarlo Mondini, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 179,291, Dec. 11, 1979, Pat. No. 4,384,388. This application Jun. 17, 1982, Ser. No. 389,480

Claims priority, application Switzerland, Apr. 25, 1978, 4442/78

Int. Cl.³ D01G *15/12*

U.S. Cl. 19—99 22 Claims



1. Apparatus for controlling the working conditions between two rotating cylinders equipped with a point clothing, and on the cylindrical surface of which a fiber web is mutually transferred, and which cooperate at a small mutual distance of a processing machine of a staple fiber spinning plant, characterized in that a measuring element is provided for continuously or cyclically scanning a characteristic which is directly connected with the dimensions of at least one of the two cylinders and that the support members of at least one cylinder are arranged movable mutually parallel in a plane substantially parallel to the plane containing the axes of both cylinders, and that moving elements for the movable support members of the cylinder and control means are provided, which control the moving elements in function of the characteristic scanned.

4,434,532

APPARATUS AND METHOD FOR DEPOSITING TEXTILE FIBER SLIVER

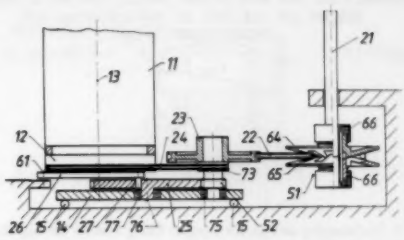
Peter Oehy, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed May 4, 1982, Ser. No. 374,880

Claims priority, application Switzerland, May 4, 1981, 2873/81

Int. Cl.³ B65H *54/80*

U.S. Cl. 19—159 R 15 Claims



1. An apparatus for depositing a textile fiber sliver in a can, said apparatus comprising

a rotatable turntable for supporting a can thereon to rotate about a first longitudinal axis;

a funnel gear wheel rotatably mounted above said turntable on a second longitudinal axis spaced from and parallel to said first longitudinal axis, said gear wheel having a funnel for passage of a sliver therethrough, said funnel being radially offset from said second axis;

means for moving said turntable relative to said gear wheel to vary the lateral distance between said axes; and

means for varying the rotational speed of said turntable as a function of the lateral distance between said axes whereby said turntable is rotated at a maximum speed with said lateral distance being at a minimum and said turntable is rotated at a minimum speed with said lateral distance being at a maximum.

4,434,533

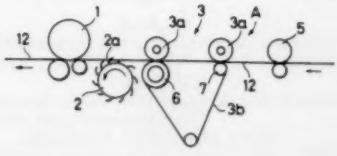
HIGH DRAFT APPARATUS FOR WORSTED SPINNING PROCESS

Goro Ogawa, Mie, Japan, assignor to Nakagawa, Seisakusho Co., Ltd., Japan

Filed Feb. 18, 1982, Ser. No. 349,850

Int. Cl.³ D01H *5/86*

U.S. Cl. 19—247 12 Claims



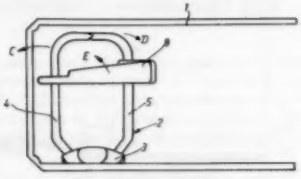
1. A high draft apparatus for use in the worsted spinning process wherein between a front roller and a back roller at the gilling or bobinoir step of the worsted spinning process a porcupine roller is arranged on the side of the front roller, and an intermediate roller separate from and not engaged with the porcupine roller is arranged on the side of the back roller between the back roller and separate porcupine roller to construct a series of a draft apparatus.

4,434,534

HOLDING-DOWN AND CLAMPING DEVICE FOR SHACKLE MECHANISMS

Anthony Handler, Mühlbachergasse 14, Vienna, Austria A-1130

Filed Jan. 21, 1982, Ser. No. 341,291
Claims priority, application Austria, Feb. 4, 1981, 491/81
Int. Cl.³ B42F *13/00, 3/00, 1/00*
U.S. Cl. 24—67.1 **5 Claims**



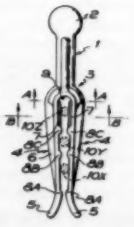
1. A clamping device for a paper filing system having at least two spaced apart sheet reciving shackles for receiving punched paper, each shackle having two legs, which comprises a substantially flat body portion having at least two spaced L-shaped apertures having two legs, the spacing between the apertures at corresponding portions thereof corresponding to the spacing between the sheet receiving shackles, the shackles lying in parallel planes and one leg of each aperture extending parallel to the planes containing the shackles and the other leg of each aperture extending transversely to said planes, the transverse legs being aligned one with the other, the body portion also having two hook portions, one associated with each aperture in the body portion and each defining a bite for receiving one leg of the shackles, the hook portions extending substantially parallel to the transverse legs of the associated apertures and the spacing between each hook portion and its associated transverse leg being substantially equal to the spacing of the two legs of each shackle so that the clamping device may be clamped to the shackles when one shackle leg is engaged in the transverse leg of the aperture and the other shackle leg is engaged in the associated hook portion bite.

4,434,535

CLOTHES PEG

Raymond L. Woodley, 20 Nook Road, Scholes, Leeds LS15 4BU, Yorkshire, England

Filed Jan. 26, 1981, Ser. No. 228,448
Int. Cl.³ D06F *1/00*
U.S. Cl. 24—562 R **7 Claims**



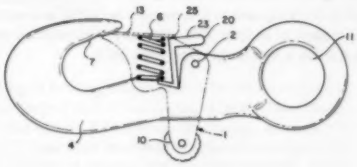
1. A one-piece plastics clothes peg comprising a pair of limbs which engage over a clothes line to grip clothes thereto, said limbs extending from a shoulder region so as to converge to an open end and to be resiliently spread when the peg is pushed over the clothes line, and wherein at least one of the inner faces of the limbs adjacent the shoulder region is flat and has a centrally located longitudinally extending rib which has a generally flat face lying parallel to the inner face of the limb so that the flat face of the rib and the portions of the limb face on opposite sides of the rib, form a clothes line engaging face.

4,434,536

LOCKING SNAP HOOK

Terrance L. Schmidt, Littleton, and Wayne L. Olson, Evergreen, both of Colo., assignors to Rose Manufacturing Company, Englewood, Colo.

Filed Oct. 13, 1982, Ser. No. 433,873
Int. Cl.³ A44B *13/02*
U.S. Cl. 24—241 PP **7 Claims**



1. A locking snap hook comprising:

a snap hook body having an open hook shaped end having pivotally attached thereto a spring biased latching means for closing the open portion of the hook;

said spring biased latching means including a latch body, spring means within said latch body for urging said latch body into a position where the open hook shaped end of the snap book body is closed by said latch body; and

locking means at least partially received within said latch body and cooperating with said snap hook body and with the spring means and the latch body for alternatively permitting opening and closing of the open portion of the hook shaped end of the snap hook body by said latching means; and

wherein said locking means is capable of occupying at least two different positions and when in a first position a portion of said locking means rests in a recess in said snap hook body proximate to the pivotal attachement of said latch body to said snap hook body, while another portion or said locking means engages a portion of said body in a manner to interfere with the movement thereof and when in a second position said locking means rests in said recess in said snap hook body in a manner such that the remainder of said locking means does not interfere with the movement of said latch body; and

said spring means within said latch body cooperates with said locking means, said latch body and said snap hook body so as to urge movement of said latching means about its pivot connection to the snap hook body to effect closure of the open portion of the hook shaped end with the latch body.

4,434,537

INTEGRAL LATCHING MECHANISM FOR MODULE FRONT PLATE

Thomas R. Bean, Concord; Edward F. Stockmaster, Mentor, and George S. Whaley, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 17, 1981, Ser. No. 284,262
Int. Cl.³ G12B *9/00;* **H05K** *1/14, 7/12*
U.S. Cl. 24—380 **11 Claims**

11. A method for latching and unlatching to and from a mounting rack a circuit board module having a module front plate and being slidably disposed in the mounting rack having a latch aperture comprising the steps of:

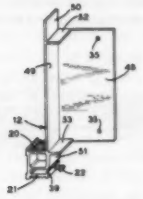
providing a finger hold on a lower portion of the module front plate which finger hold extends from the module

front plate in a direction away from the circuit board defining a forwardly direction;

providing a resilient tab integrally connected with the finger hold and extending in a direction toward the circuit board defining a rearwardly direction;

providing a prong including a shaft extending rearwardly from the resilient tab and terminating in a portion defining an head having a shoulder forwardly thereof;

deflecting said resilient tab to align said head with said aperture;



fully inserting the circuit board module in the rack and said head of said prong through the aperture;

releasing said resilient tab to allow said shoulder to engage said rack to preclude withdrawal of said module therefrom;

gripping said finger hold and said resilient tab to deflect said resilient tab toward said finger hold to align said head with said aperture; and

withdrawing said head of said prong through the aperture and the circuit board module from the rack.

4,434,538

BOTTOM STOP APPLYING AND GAPPING APPARATUS FOR A SLIDE FASTENER CHAIN

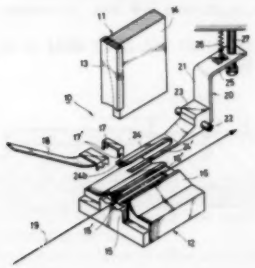
Tatsuo Osaki, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,809

Claims priority, application Japan, May 28, 1980, 55-73689[U]

Int. Cl.³ B21D *53/56*

U.S. Cl. 29—33.2 **7 Claims**



1. A bottom stop applying and gapping apparatus for a slide fastener chain having a pair of support tapes each carrying on and along its one longitudinal edge a row of fastener coupling elements, which apparatus comprises a punch assembly including a clamping punch and a cutting punch integral therewith, a die assembly including a clamping die and a cutting die integral therewith, said punch assembly and said die assembly cooperating in applying a bottom stop to the fastener chain and simultaneously gapping the chain at predetermined intervals, and a means for positioning and holding a group of fastener coupling elements on the chain, said means comprising a crank arm resiliently supported on a machine frame and having two parallel prongs spaced by a distance corresponding to the transverse width of a coupled set of fastener elements and have respective flat bottoms engageable with the support tapes, said crank arm having at one of its ends a link, a spring member connecting said link to the machine frame and normally biasing said crank arm toward said die assembly.

4,434,539

METHOD OF MANUFACTURING A HEAT EXCHANGER

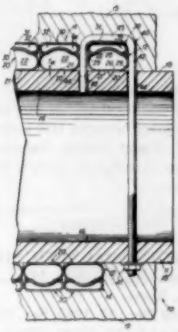
David M. Sanborn, Roswell, and Andrew L. Blackshaw, Dunwoody, both of Ga., assignors to E-Tech, Inc., Atlanta, Ga.

Division of Ser. No. 202,888, Nov. 3, 1980, Pat. No. 4,316,502.

This application Feb. 16, 1982, Ser. No. 349,180

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 V **12 Claims**



1. A method of forming a heat transfer coil comprising the steps of:

(a) winding first and second pieces of tubing helically around a winding mandrel to form a coil so that the second piece of tubing lies against said first piece of tubing with both the pieces of tubing lying in generally the same radial plane around the winding mandrel where each of the pieces of tubing is deformed into a non-circular shape and the passage through at least one of the pieces of tubing has a deformed cross-sectional area smaller than the desired cross-sectional area the passage is to have when the heat transfer coil is completed; and,

(b) internally pressurizing at least the piece of tubing having the passage with the deformed cross-sectional area smaller than the desired cross-sectional area while the tubing is maintained in the helical configuration to non-elastically deform both pieces of tubing to change the cross-sectional areas of the passages through the pieces of tubing to a desired final size while maintaining intimate physical contact between the pieces of tubing.

4,434,540

PROCESS FOR REPAIRING OR MODIFYING REFRACTORY PLATES OF LADLE CASTING CASSETTES

Romano Cappelli, Milan, Italy, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Filed Oct. 5, 1981, Ser. No. 308,733

Claims priority, application Italy, Aug. 7, 1981, 23358 A/80

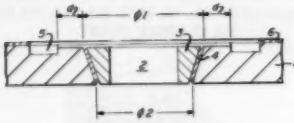
Int. Cl.³ B22D *11/10*

U.S. Cl. 29—402.11 **6 Claims**

1. A method of renovating a spent orificed slide gate of a sliding gate valve for use in controlling the flow of molten metal, said slide gate comprising a flat, elongated refractory plate having a sliding face on one side thereof, a flow passage through the interior portion of the plate and a refractory discharge nozzle forming an extension of said flow passage being integral with and depending from the other side of said refractory plate, said method comprising the steps of:

(a) boring said flow passage to remove areas of wear, said boring being to a greater diameter through said plate and part way along said discharge nozzle and to a smaller diameter along the remainder of said flow passage through said discharge nozzle;

(b) securing a prefabricated refractory insert ring having an axial length greater than the thickness of said plate in said greater diameter portion of said boring;



(c) positioning an elongated tubular former concentrically within said smaller diameter portion of said boring; and

(d) filling the space between said former and the confronting inside wall of said smaller diameter boring portion with cementitious material to form a lining through said discharge nozzle.

4,434,541

ELECTROMAGNETIC SHIELDING

Donald H. Powers, Jr., Needham, Mass., assignor to Chomerics, Inc., Woburn, Mass.

Filed Dec. 22, 1980, Ser. No. 219,069

Int. Cl.³ B23P *19/00;* **H01P** *1/00, 11/00*

U.S. Cl. 29—526 R **10 Claims**

1. The method of providing electromagnetic shielding between two surfaces which comprises placing an electromagnetic energy shield between said two surfaces, said electromagnetic energy shield having a volume resistivity to be effective as an electromagnetic energy shield, said shield having dispersed therein electrically conductive irregularly shaped particles, said particles comprising an outer surface of silver on a sensitizing layer of tin which is on an aluminum central core, said tin being present on said aluminum in an amount sufficient to provide a surface to which the silver may be placed thereon, said particles having the ability to withstand 120° C. for 120 hours without exhibiting substantial loss in conductivity.

4,434,542

TOOL FOR ELECTRICALLY CONNECTING INSULATED WIRES

Horst Forberg; Hermann Herfort; Gunter Hegner, and Manfred Müller, all of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,699

Claims priority, application Fed. Rep. of Germany, May 20, 1980, 8013494[U]

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—566.4 **9 Claims**

1. A tool for electrically connecting an insulated wire to a terminal element having two oppositely disposed resilient togues defining a longitudinal contact slot, said tool comprising:

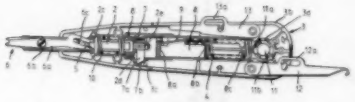
a handle grip member comprising a hollow housing;

a striker mechanism within said housing, said striker mechanism comprising:

a Slider mounted for selective longitudinal movement with respect to said housing;

a rear compression spring normally biasing said slider forwardly with respect to said housing;

a ram member mounted to said housing for selective longitudinal movement with respect thereto, the rearward end of said ram being detachable coupled to said slider for longi-



tudinal movement therewith, the forward end of said ram projecting outwardly from the forward end of said housing;

a longitudinally slotted pressing plate mounted on the forward end of said ram, said plate being adapted to transversely urge the wire into the contact slot in the terminal, said pressing plate being formed with stop means for limiting the depth of insertion of the wire into the contact slot;

a scissors blade pivotably mounted to said ram; and

means on said housing for pivoting said blade to sever the wire a predetermined distance from said terminal upon insertion of the wire therein.

4,434,543

PROCESS FOR PRODUCING ADJACENT TUBS IMPLANTED WITH DOPANT IONS IN THE MANUFACTURE OF LSI COMPLEMENTARY MOS FIELD EFFECT TRANSISTORS

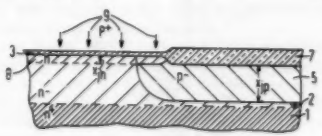
Ulrich Schwabe, Munich, and Erwin Jacobs, Vaterstetten, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

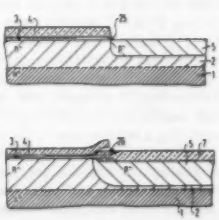
Filed Nov. 2, 1982, Ser. No. 438,903

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149185

Int. Cl.³ H01L *21/263, 21/22;* **B01J** *17/00*

U.S. Cl. 29—576 B **15 Claims**





1. In a method for producing adjacent tubs implanted with

doping material ions in the manufacture of LSI complementary MOS field effect transistor circuits, with which, for the acceptance of the n- or, respectively, p- channel transistors of the circuit in a silicon substrate (1), p-doped or respectively, n-doped tubs (5, 8) are produced in an epitaxial layer (2) applied to the substrate (1), with the corresponding dopant material atoms being introduced into said tubs by means of multiple ion implantations (6, 9, 10, 16, 21, 23) for defining the different transistor threshold voltages and whereby masking for the individual ion implantations occurs by structures composed of a material selected from the group consisting of photosensitive resist, silicon oxide and silicon nitride, wherein the improvement comprises a sequence of the following steps:

(a) producing a p-tub (5) by a boron ion implantation (6) in a n-doped epitaxial layer (2) applied onto a n^+ -doped substrate (1) and covered with an oxide layer (3), after carrying out a masking of the remaining regions with a silicon nitride mask (4);

(b) stripping off the oxide layer (3) while undertaking a deliberate underetching (25) of the silicon nitride layer (4);

(c) conducting a local oxidation process and diffusing the implanted boron ions down to a penetration depth x_{jp}, which is in the range of the epitaxial layer (2) thickness;

(d) stripping off the silicon nitride mask (4);

(e) producing a n-tub (8) by a implantation (9) of phosphorous or arsenic ions and subequently diffusing the so-implanted ions to a significantly lower penetration depth x_{jn} than the depth of the p-tub (x_{jp}), so that x_{jp} is $\cong 4x_{jn}$.

4,434,544

MULTILAYER CIRCUIT AND PROCESS FOR MANUFACTURING THE SAME

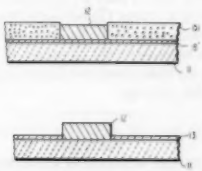
Akihiro Dohya; Yasuhiko Hino, and Mitsuo Abe, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 232,051, Feb. 5, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,636

Claims priority, application Japan, Feb. 25, 1980, 55-22471; Feb. 25, 1980, 55-22472

Int. Cl.³ H01L *29/46*

U.S. Cl. 29—578 **10 Claims**



1. A process for manufacturing a multilayer circuit comprising the steps of:

depositing a layer consisting of a base metal on a heat-resistant insulating substrate;

depositing a thin film layer of a first noble metal on said layer of base metal;

depositing a conducting layer of second noble metal on a predetermined region of said thin film layer of said first noble metal;

converting the remaining region, not covered by said conducting layer, of said base metal into an insulating metal oxide by oxidizing at a high temperature, said oxidizing step also producing an alloy of said first noble metal and said second noble metal; and

removing the remaining region, not covered by said conducting layer, of said thin film layer of said first noble metal by etching with an etching solution ineffective for etching the alloy of said first noble metal and said second noble metal.

4,434,545

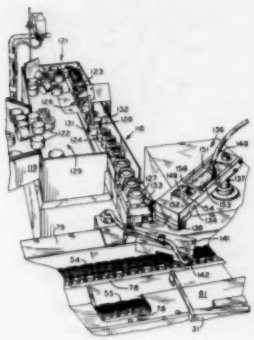
METHOD FOR ASSEMBLING DYNAMOELECTRIC MACHINE END SHIELD PARTS

James M. Tomson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 128,085, Mar. 7, 1980, Pat. No. 4,348,791. This application Jul. 16, 1982, Ser. No. 399,121

Int. Cl.³ H02K *15/14*

U.S. Cl. 29—596 **3 Claims**



1. A method of lifting the end frame of a dynamoelectric machine from a conveyor at an oil well cover assembly work station; wherein the end frame includes a centrally disposed bearing supporting portion and laterally extending portions, at least some of which are susceptible of being supported on conveyor means; the method comprising: moving an end frame on the conveyor means into proximity with a lift mechanism and guiding the end frame in the vicinity of the lift mechanism with guide means; aligning the end frame with the lift mechanism and arresting movement of the end frame with a lift mechanism by moving a latch mechanism into the path of movement of the end frame by moving an inclined surface thereof into interfering relation with a portion of the end frame so that movement of the end frame up the incline will at least tend to raise a portion of the end frame from the conveyor; engaging the end shield in the vicinity of the bearing supporting portion thereof while holding the end frame in engagement with the conveyor means with the guide means; elevating the end frame above the conveyor means with the lift mechanism while continuing to engage the end frame with the guide means and thereby holding the end frame against the lift mechanism; performing a work operation on the end frame at the work station between the time that the lift mechanism elevates the end frame from the conveyor means and a subsequent time at which the lift mechanism has redeposited the end frame on the conveyor means; and further comprising: grasping an oil well cover about a cylindrical periphery thereof, moving the oil well cover into overlying and aligned relationship with the centrally disposed bearing supporting portion of the end frame while the end frame is held stopped by the latch mechanism over the lift mechanism and while the end shield is supported on the conveyor means; thereafter elevating the lift mechanism and guide means as set forth hereinabove, and inserting the centrally disposed bearing supporting portion of the end frame into the oil well cover while lifting the end frame from the conveyor, and thereby effecting assembly of the oil well cover and end frame; releasing the oil well cover; and only thereafter lowering the lift mechanism.

4,434,546

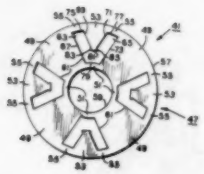
METHOD OF MAKING A CORE

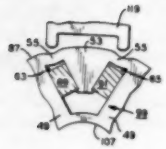
Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 77,784, Sep. 21, 1979, Pat. No. 4,327,302. This application Sep. 22, 1981, Ser. No. 304,536

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—598 **35 Claims**





1. A method of making a core adapted to be used in a dynamoelectric machine, the core having a plurality of laminations with each lamination respectively including a body of generally thin ferromagnetic material, an inner peripheral edge and an outer peripheral edge on the body, a plurality of openings through the body and spaced apart generally thereabout, each opening having a pair of leg parts with a pair of end portions spaced apart generally adjacent the outer peripheral edge and a common end edge opposite the end portion pair spaced generally adjacent the inner peripheral edge, a plurality of first pole sections on the body between adjacent ones of the openings and the inner and outer peripheral edges, a plurality of means on the body between the inner peripheral edge and the common edge of the openings for integrally interconnecting with the first pole sections, a plurality of second pole sections on the body between the leg part pair of the openings and extending from the outer peripheral edge generally toward the common end edge, a pair of opposite seats on the second pole sections extending into the leg part pair, and a plurality of means on the body between the outer peripheral edge and the end portion pair of the openings for bridging between the second pole sections and the ones adjacent thereto of the first pole sections, respectively, and a plurality of pairs of magnetic material elements, the method comprising the steps of:

stacking the laminations and aligning the openings with each other so as to define a plurality of corresponding slots extending through the laminations in the stack thereof, respectively;

disposing the magnetic material element pairs within the leg part pairs of the slots and engaging the magnetic material element pairs with the opposite seat pair on the second pole sections, respectively;

deforming the bridging means pairs and moving thereby the second pole sections with respect to the adjacent ones of the first pole sections so as to insure abutting engagement of the magnetic material element pairs between the second pole sections and the adjacent ones of the first pole sections, respectively;

providing in the slots a nonmagnetic hardenable material so as to at least generally fill the interstices of the slots between the magnetic material element pairs therein, the second pole sections and the adjacent ones of the first pole sections and forming a pair of opposite end rings of the hardenable material adjacent a pair of opposite ends of the lamination stack, with the hardenable material of the end rings being integral with that in the slots, respectively;

solidifying the hardenable material;

removing a part of the deformed bridging means pairs so as to disjoin the second pole sections from the adjacent ones of the first pole sections, respectively; and

machining the outer peripheral edges of the laminations in the stack thereof to provide the core with a preselected outside diameter, respectively.

4,434,547

PROCESS FOR THE MANUFACTURE AND ADJUSTMENT OF A JOSEPHSON EFFECT MAGNETIC FLUX PICK-UP

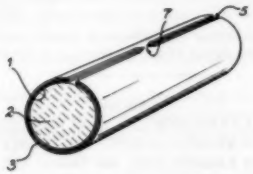
Daniel Pascal, Orsay, and Denis Duret, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 29, 1981, Ser. No. 323,534

Claims priority, application France, May 5, 1980, 80 09968

Int. Cl.³ H01L *39/24*

U.S. Cl. 29—599 **15 Claims**



1. Process for manufacturing and adjusting a Josephson effect magnetic flux pick-up, comprising depositing a thin, uniform layer (**1**) of a superconducting material on a cylindrical insulating bar (**2**) having an axis and a cylindrical surface, then making a cut (**5**) through the layer of superconducting material on a line along the cylindrical surface of the cylindrical bar (**2**), which line is parallel to the axis of the cylindrical bar, while leaving a bridge (**7**) between two edges of the layer of superconducting material defined by the cut, then subjecting the pickup thus manufactured to pulses for adjustment of the critical current, by induction, and measuring, by induction, the parameters of the pick-up.

4,434,548

METHOD OF MANUFACTURING PLUG-IN ELECTRICAL FUSES

David G. E. Beswick, Warminster, England, assignor to Kenneth E. Beswick Limited, Frome, England

PCT No. PCT/GB80/00209, § 371 Date Jul. 27, 1981, § 102(e) Date Jul. 27, 1981, PCT Pub. No. WO81/01627, PCT Pub. Date Jun. 11, 1981

PCT Filed Dec. 3, 1980, Ser. No. 286,815

Claims priority, application United Kingdom, Dec. 3, 1979, 7941694

Int. Cl.³ H01H *69/02*

U.S. Cl. 29—623 **13 Claims**

1. A method of manufacturing a plug-in electrical fuse of the type in which the fusible element is disposed within an insulating housing and is electrically connected between the adjacent ends of two spaced substantially-coplanar blade-like terminals secured within and projecting from the housing comprising the steps of:

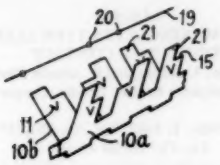
forming a generally H-shaped terminal blank from sheet metal material, said blank having laminar uprights integrally joined by a laminar cross-bar portion,

folding said H-shaped blank about an axis substantially parallel to said cross-bar portion of said blank to dispose upper

and lower laminar portions of said uprights of said H-shaped blank in generally mutually opposed relationship,

locating a fusible element so that it is disposed between the opposed laminar portions of said blank,

flattening said opposed laminar portions together with said fusible element disposed therebetween to form an assembly including blade-like terminal portions of double laminar construction having said fusible element electrically connected therebetween,



mounting said assembly in an insulating housing with said fusible element disposed within said housing and the leading ends of said blade-like terminal portions projecting therefrom, and

severing said cross-bar portion from between said terminal portions.

4,434,549

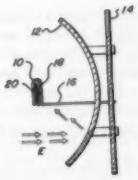
METHOD OF MAKING AN IMPROVED PYROELECTRIC SENSOR

Peter R. Smith, Littleton, and Charles Coleman, Lakewood, both of Colo., assignors to Statitrol, Inc., Lakewood, Colo.

Division of Ser. No. 205,146, Nov. 10, 1980, Pat. No. 4,379,971. This application Sep. 30, 1982, Ser. No. 431,002

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—832 **4 Claims**



1. A method of making a infrared sensing device including the steps of:

a. mounting a sheet of thin film pyroelectric material in a peripheral holding frame;

b. forming a symetrical pattern of electrodes on both sides of said thin film material and properly aligning the respective electrodes on each side to form a plurality of individual infrared sensors;

c. coating the entire outer surface of one side of said thin film material with a layer of energy absorbing material, said absorbing material being transparent to all energy outside of the infrared band but capable of absorbing and converting to heat energy all energy within this band;

d. forming an equal number of sensor holders sized and symetrically positioned to correspond to and receive said plurality of infrared sensors, said holders being joined together in an integral matrix and each of said holders having a central opening formed therein;

e. adhering the sheet of thin film to the surface of the holder matrix with the coated surface in contact with the surface of the matrix, said sheet being properly positioned so that each infrared sensor is precisely aligned with a holder and its central opening; and

f. separating each holder and its attached infrared sensor from said matrix to form an individual infrared sensing device.

4,434,550

METHOD AND APPARATUS FOR INSERTION OF ELECTRICAL COMPONENTS INTO A CIRCUIT BOARD

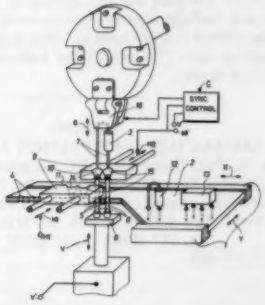
Heinz Wilke, Diekholzen, and Klaus-Uwe Fonck, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,426

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044860

Int. Cl.³ H05K *3/00*; **B23P** *19/00*

U.S. Cl. 29—837 **7 Claims**



1. Method of insertion of electrical network components (3), having at least one connection wire (7), into a printed circuit board (2) formed with receiving holes (4, 5) therethrough,

in which the network components are gripped by an insertion gripper (16) and moved towards the printed circuit board, with the at least one wire thereof extending essentially perpendicularly to the plane of the printed circuit board,

and in which the printed circuit board is aligned with respect to the at least connection wire so that the receiving holes are in essential alignment therewith,

comprising, in accordance with the invention, the steps of guiding at least one thin-walled tube (8) to and through the holes (4, 5) of the printed circuit board from the side remote from said gripper means (16) until the at least one tube extends out of the plane of the printed circuit board at the side close to the gripper means and beyond said plane;

introducing the at least one connection wire (7) into the at least one tube (8) by moving the gripper means towards the printed circuit board;

releasing the network component from the gripper means to permit the component, with the at least one connection wire in the tube, to drop;

and withdrawing the tube (8) from the hole to thereby introduce the at least one connection wire into the hole, and continuing to withdraw the at least one tube until it clears the connection wire.

4. Apparatus for insertion of electrical network components (3) having at least one connection wire (7) into a printed circuit board (2) formed with at least one receiving hole (4, 5) therethrough,

and having an insertion gripper means (16) positioned above the printed circuit board, and movable towards the printed circuit board, for gripping a network component (3) with its insertion wire (7) extending essentially perpendicularly to the plane of the printed circuit board, and in alignment with a receiving hole (4, 5) through the printed circuit board,

comprising, in accordance with the invention,

a holder or carrier (6) positioned below the printed circuit board, and movable upwardly towards the printed circuit board;

a thin-walled tube (8) extending upwardly from the holder or carrier and in alignment with the receiving hole (4, 5) and of sufficient length to extend upwardly through and beyond the upper surface of the printed circuit board upon movement of the holder or carrier to an upper position, while clearing the printed circuit board upon movement of the holder or carrier (6) to a lower position to permit introduction of the tube (8) through the hole and insertion of the connection wire (7) of the component into the tube (8) extending above and beyond the upper surface of the printed circuit board, and subsequent withdrawal of the tube through the hole (4, 5) and lowering of the component towards the top surface of the printed circuit board, and subsequent withdrawal of the tubes (8) from the printed circuit board to effect positioning of the connection wire (7) through the hole (4, 5) of the printed circuit board.

4,434,551

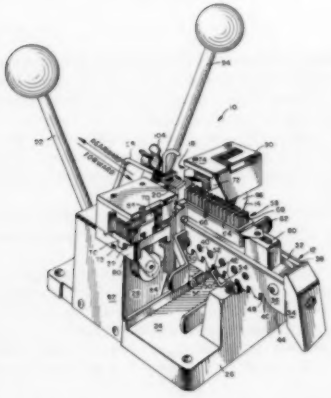
CONDUCTOR TERMINATION APPARATUS

Harley R. Holt, Forest Park, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 232,928, Feb. 9, 1981, abandoned. This application Feb. 23, 1981, Ser. No. 237,192

Int. Cl.³ H01R *43/04*; B23P *19/00*

U.S. Cl. 29—861 **37 Claims**



1. A method for terminating a plurality of conductors to a corresponding plurality of contacts mounted in a connector body comprising the steps of:

A. supporting said connector body at a loading station;

B. aligning retention means with a group of said contacts corresponding to a portion of said connector body and inserting a group of said conductors in said retention means;

C. transporting said corresponding portion of said connector body along with said retention means to a termination station and effecting termination of said group of conductors to said group of contacts; and

D. sequentially performing steps B and C on succeeding groups of said conductors and said contacts corresponding to succeeding portions of said connector body until said plurality of conductors has been terminated to said plurality of contacts.

3. In an apparatus for terminating a plurality of conductors to a corresponding plurality of contacts mounted in a connector body, the apparatus including terminating means for effecting termination of the conductors to the contacts, and means for actuating the terminating means, the improvement comprising:

wire hold-down means which are integral with said terminating means and which move linearly in unison with said actuating means, said wire hold-down means being used for applying a clamping force to said conductors only during termination thereof.

4,434,552

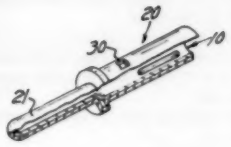
METHOD OF MAKING A PIN TYPE ELECTRICAL CONNECTOR CONTACT

Robert W. Brush, Sr., Unadilla, and R. Amelia Piscitelli, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1982, Ser. No. 353,757

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—876 **1 Claim**



1. A method of making a two piece pin type electrical connector contact comprising the steps of:

stamping from a sheet of metal a rectangular shaped piece;

forming said rectangular piece into a sleeve having an axial opening running the entire length of said sleeve, a rear open end portion and a forward closed end pin shaped portion, the diameter of the opened end portion being greater than the diameter of the closed end portion of said sleeve;

cold drawing from a piece of metal a tubular member having a rear open end portion, an enlarged middle portion having a forwardly facing shoulder and a rearwardly facing shoulder, and a forward closed end pin shaped portion, said diameters of said forward and rear end portions of said tubular member being slightly less than the respective diameters of said forward and rear end portions of said sleeve;

radially compressing said sleeve so that the axial opening in said sleeve is reduced, thereby reducing the diameter of the forward and rear portions of said sleeve;

inserting said sleeve into said tubular member so that the closed end portion of said tubular member surrounds the closed end portion of said sleeve; and

punching a wire stop and inspection hole through said sleeve and member in the open end portions thereof.

4,434,553

DRY-SHAVING APPARATUS HAVING A TRIMMER

Werner Kness, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,872

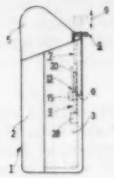
Claims priority, application Austria, May 5, 1981, 1983-81

Int. Cl.³ B26B *19/38*

U.S. Cl. 30—34.1 **3 Claims**

1. A dry-shaving apparatus which comprises a housing section having an opening formed therein; a trimmer constructed as a flat unit and arranged on said housing section so as to be slidable between at least two positions, the trimmer unit being mounted in said opening; two lateral guide portions formed on the trimmer unit and extending parallel to each other and to the sliding direction of the trimmer unit; guides formed on the housing section and respectively co-operating with said guide portions, said guides, viewed in the sliding direction, being arranged near one end of the opening; a bridge arranged near

the other end of the opening and extending across said opening transversely of the sliding direction, said bridge engaging the trimmer unit from the inside of the housing section; and a resilient strip extending from the trimmer unit in the sliding direction and projecting into the interior of the housing section



towards the bridge, the normal distance, measured in the sliding direction, between the free end of the strip and those ends of the guide portions remote from said free end of the strip being greater than the clearance between the bridge and those ends of the guides facing said bridge.

4,434,554

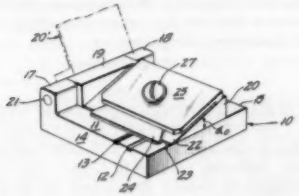
OPTICAL FIBER STRIPPING DEVICE

Kenneth N. Korbelak, Jackson, N.J., assignor to GK Technologies, Incorporated, Greenwich, Conn.

Filed Jun. 29, 1982, Ser. No. 393,378

Int. Cl.³ H02G 1/12

U.S. Cl. 30—90.8 **5 Claims**



1. A stripping tool for stripping the buffer coat from a buffer-coated optical fiber that is characterized by overall coated diameter of magnitude D_C on an optical fiber of diameter of magnitude D_F, said tool comprising a base having a flat upper surface with at least two elongate grooves therein, a knife and knife holder having a flat bottom surface transversely spanning said grooves and having an articulated connection to said base such that in one position the cutting edge of the knife held by said holder and the bottom of said holder are both in contact with the flat upper surface of said base and in another position said knife and holder are sufficiently removed from the flat upper surface of said base to permit manually applied entry of a length of coated optical fiber in one of said grooves, the width of said grooves being in excess of the magnitude D_C, the depth of one of said grooves being in a first slight excess of the magnitude $(D_C+D_F)/2$, and the depth of the other of said grooves being in a second slight excess of the magnitude D_F.

4,434,555

CUTTER FOR FLEXIBLE PIPES

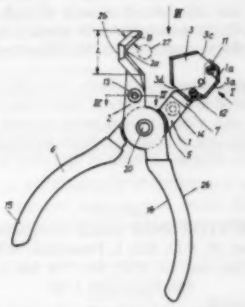
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,636

Int. Cl.³ B26B 17/00

U.S. Cl. 30—92 **15 Claims**

1. A hand-held cutting tool, comprising elongate first and second members and a blade; said first and second members being pivotally coupled to each other between their ends and being pivotal relative to one another about an axis; one end of each said member being a handle and the other end thereof being a jaw, said jaws being moved between a closed position adjacent each other and an open position spaced from each other in response to relative pivotal movement of said first and second members; said blade being releasably secured to said jaw of said first member, projecting therefrom toward said jaw of said second member, and having a cutting edge facing said jaw of said second member; said jaw of said second member having means defining a V-shaped surface which faces and opens toward said blade and which has therein a deep, elongate



slot which is parallel to and receives said blade in said closed position of said jaws; and said jaw of said first member being disposed on one side of said blade, having a flat surface against which said blade is disposed, having means defining a threaded opening in said flat surface, and including a screw which has a threaded shank engaging said threaded opening and a head disposed against a side of said blade remote from said flat surface, said blade being securely clamped between said flat surface and said head of said screw.

4,434,556

ARRANGEMENT FOR LUBRICATING SAW CHAINS OF POWER SAWS

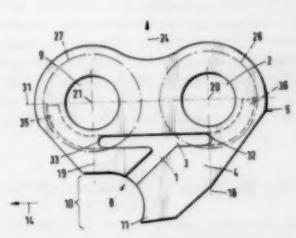
Karl Nitschmann, Schorndorf; Günther Weyda, Waiblinge-Hohenacker; Bodo Emmrich, Stuttgart, and Karl O. Stimpfig, Waiblingen-Beinstein, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,614

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016596

Int. Cl.³ B27B 17/12

U.S. Cl. 30—123.4 **14 Claims**



1. An arrangement for lubricating the saw chain of a power-driven chain saw having a guide for accommodating and guiding the saw chain, the saw chain including chip-removing members, cutting-tooth members, and connecting members, all of which are respectively provided with two rivet holes, said members being interconnected in a specific pattern by means of rivets and said rivet holes to form rivet connections, said chip-removing members having respective extensions which run in

the guide bar provided with an oil supply for lubricating the saw chain, the arrangement comprising:

at least one groove defining an oil guide formed in the side surface of each of said chip-removing members, the oil guide having an inlet opening communicating with the oil supply, the oil guide being disposed in said surface to extend counter to the running direction of the saw chain and to extend at an angle upwardly toward one of the rivet holes;

each of said chip-removing members further having at least one oil channel formed in said side surface and communicating with the end of said oil guide remote from said inlet opening; said oil channel of each of said chip-removing members being at least partially covered by a member of the saw chain connected to the chip-removing member; and,

said oil channel having two ends, one end of said channel being located in the vicinity of one of the rivet holes, and the other end of the channel being located in the vicinity of the other one of said rivet holes whereby oil from said oil guide is directed to both of said rivet holes.

4,434,557

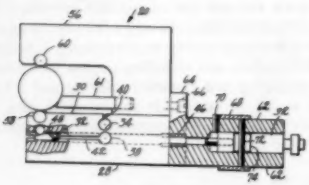
INDICATOR SNAP GAGE ASSEMBLIES

Franklin Meyer, Jr, P.O. Box 1, Forestdale, R.I. 02824

Filed Dec. 10, 1982, Ser. No. 448,840

Int. Cl.³ G01B *5/08*

U.S. Cl. 33—148 R **9 Claims**



1. An indicator snap gage head adapted to being releasably coupled to an indicator mechanism for indicating, on the mechanism, a graduated value of an external dimension of a workpiece, comprising a base, a fixed jaw mounted on the base and having a workpiece engaging surface spaced from the base, a movable jaw pivotally mounted on the base opposite the fixed jaw for movement in a measuring plane toward and away from the fixed jaw, the pivot being located inwardly towards the mechanism from the measuring plane and interconnecting means between the movable jaw and the indicator mechanism including a spring-pressed plunger slidable in the base in a direction generally perpendicular to the measuring plane and having a tapered end engaging the movable jaw and its opposite end adapted to be releasably coupled to the indicator mechanism for urging the movable jaw toward the fixed jaw and for translating, by the degree of its taper, the position of the movable jaw in engagement with the workpiece into an indication on the mechanism of the value of the dimension.

4,434,558

SURFACE PROFILE MEASURING APPARATUS AND METHOD

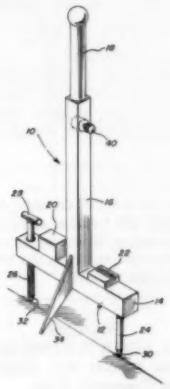
Samuel A. Face, Jr., and Samuel A. Face, III, both of P.O. Box 6341, Norfolk, Va. 23508

Filed Sep. 18, 1981, Ser. No. 303,714

Int. Cl.³ G01B *7/34*

U.S. Cl. 33—174 P **11 Claims**

1. In a device for measuring flatness deviations of a surface profile having an undulation wavelength, including a rigid frame, an inclination sensor mounted on the frame and having a sensitivity axis extending therethrough, and signal readout means connected to the sensor for indicating inclination measurements of said sensitivity axis, the improvement comprising a pair of frame supporting elements mounted on the frame a fixed distance from each other along said sensitivity axis, each of the said supporting elements having surface contacting means engageable with the surface at point locations, means connected to the frame for angular displacement thereof about



one of the point locations at which the frame may be pivoted, and signal adjustment means connected to the signal readout means for converting said inclination measurements into elevation differences between the surface contacting means of the respective frame supporting elements.

4,434,559

TOOL FOR GAUGING THE CORNERS OF WORKPIECES OF SHEET METAL OR THE LIKE

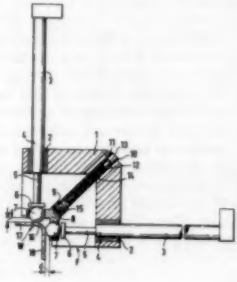
Gerhard Lauer, Grosswaldstrasse 6, D-6686 Eppelborn; Alfred Morawiez, Oderring 13, D-6610 Lebach, and Jürgen Wild, Am Stehlsberg 4, D-6601 Riegelsberg, all of Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,794

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043430

Int. Cl.³ G01B *3/56*

U.S. Cl. 33—174 L **23 Claims**



1. A tool for use in a system for automatically ascertaining the location of a corner between mutually inclined first and second surfaces of a workpiece, especially a rounded corner of a workpiece which is made of sheet metal, comprising: first and second sensors; means for supporting said sensors in such orientation that each sensor is movable toward the respective surface of the workpiece; means for moving said sensors with reference to said supporting means toward the respective surfaces along first and second paths; and work contacting

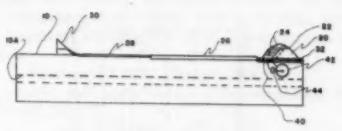
means interposed between said sensors and said surfaces, said work contacting means comprising first and second portions movable by the respective sensors toward the corresponding surfaces of the workpiece and adapted to yieldably abut against said workpiece, at least said first portion being movable substantially transversely of the path of movement of the first sensor when said first portion already engages the first surface of the workpiece while the second portion continues to advance toward the second surface of the workpiece.

4,434,560

AIMING AID FOR AN AIMING DEVICE IN A LOW LIGHT LEVEL ENVIRONMENT

Robert G. Comeyne, Stafford, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1983, Ser. No. 469,671
Int. Cl.³ F41G *1/32, 11/00*
U.S. Cl. 33—241 **9 Claims**



1. An aiming aid for visual orientation of an aiming device in a very low light level environment without emitting light in the forward direction to disclose the location of said aiming device, said aiming aid comprising:

a switchably energized light source comprised of a light emitting diode enclosed inside a hollow section of an aiming device housing;

a front sight fiber optic means having a cavity in an input end with said cavity in cooperation with said hollow section to accept transmitted light from said light source and an output that emits light in a select front sight light pattern in the rearward direction of said aiming device; and

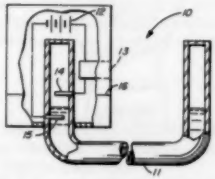
a rear sight fiber optic means having an input end in cooperation with said light source for receiving light therein through a light scattering rod partially embedded in the top of said aiming device to provide a visual orientation of said aiming device and transmitting the light to an output for emitting light in a select rear sight light pattern in a rearward direction wherein alignment of said select front and rear sight light patterns of emitted light establish a front to rear sight alignment of said aiming device.

4,434,561

LEVEL INDICATOR

Michael E. Gaspar, 115 W. Willow St., Newberry, Mich. 49868

Filed Oct. 19, 1981, Ser. No. 312,615
Int. Cl.³ G01C *9/06*
U.S. Cl. 33—366 **5 Claims**



1. A level indicator which comprises:

A. A tube which is partially filled with fluid (,):

B. A means for detecting a fluid level to which one end of said tube is attached and which comprises the following elements:

i. A transistorized amplifier having a signal input terminal, a signal output terminal, a power supply terminal and a ground terminal;

ii. An energy source connected to the power supply and ground terminals of said transistorized amplifier;

iii. A first electrode, within said tube, connected to the signal input terminal of said transistorized amplifier;

iv. A second electrode which would contact the fluid below the first electrode and would be connected to the ground terminal of said transistorized amplified;

v. An electrically conductive fluid in said tube which would complete a circuit between the first and second electrodes when the fluid reaches the level of (the) a reference point marking;

vi. An exterior surface on said means for detecting a fluid level;

C. A signaling device connected to said signal output terminal and actuated by said means for detecting a fluid level; and

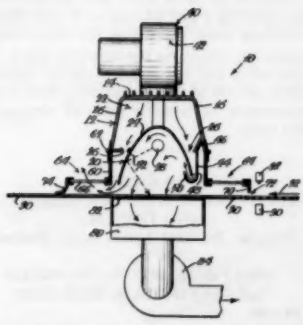
D. A reference point marking on the exterior surface of said means for detecting a fluid level which aligns with the fluid level at the first electrode where said signaling device is actuated.

4,434,562

CURING APPARATUS AND METHOD

Henry J. Bubley, Deerfield; Gene M. Faulkner, Palatine; Alex Iaccino, Mt. Prospect, and Giuseppe Rescio, Berwyn, all of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.

Filed Sep. 2, 1981, Ser. No. 298,575
Int. Cl.³ F26B *3/28*
U.S. Cl. 34—4 **11 Claims**



1. A method of curing ink, or the like, on a moving piece of work moving through a curing station having an arcuate reflecting shield facing downwardly and covering an elongated curing lamp and a blower means for blowing air for cooling, and exhaust means for pulling air from the unit, said method comprising the steps of:

directing cooling fluid from the blower means downwardly along the upper and outer surface of the arcuate reflector shield to cool the same,

directing cooling air upwardly and inwardly along the inner surface of the reflector shield to wipe the same with air to cool the same,

directing radiation from the lamp onto a work moving under the lamp and reflector shield,

trapping radiation with baffles at the upstream entrance and downsteam exit of the work on the conveyor, flowing air through the baffles, and

pulling air downwardly across the work and through the conveyor and exhausting the same from the unit.

4,434,563

METHOD AND APPARATUS FOR DRYING TOBACCO

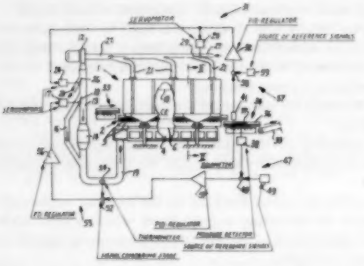
Gerhard Graalmann, Wohltorf, and Heiko Niehues, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,172

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007489

Int. Cl.³ F26B *3/04, 3/24*

U.S. Cl. 34—28 **16 Claims**



1. A method of drying tobacco, comprising the steps of transporting a continuous stream of tobacco particles through a conditioning zone; directly contacting tobacco particles in the conditioning zone with a hot gaseous fluid; converting tobacco particles in the conditioning zone into a fluidized bed during contact with hot gaseous fluid; measuring the moisture content of the thus dried tobacco particles; comparing the measured moisture content with a predetermined value; regulating the heat content of the gaseous fluid when the measured moisture content deviates from said predetermined value, including regulating a first parameter of such fluid outside of the conditioning zone; measuring the temperature of dried tobacco particles; comparing the measured temperature with a preselected value; and regulating a second parameter of the gaseous fluid outside of the conditioning zone when the measured temperature of tobacco particles deviates from said preselected value.

4,434,564

HEAT RECOVERY SYSTEM FOR CLOTHES DRYERS AND THE LIKE

John C. Braggins, Jr., 8521 Lowell Blvd., Westminster, Colo. 80030

Filed Feb. 15, 1977, Ser. No. 768,823

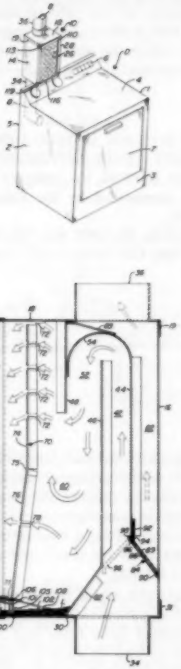
Int. Cl.² F26B *19/00;* **B01D** *50/00*

U.S. Cl. 34—86 **23 Claims**

1. Exhaust heat recovery apparatus for clothes dryers and the like, comprising:

an enclosed chamber having an inlet port for receiving exhausted air from a clothes dryer, and an indoors exhaust opening through which the dryer exhaust air is discharged into the interior environment of the home; and

scrubber means within said chamber for removing lint from the exhausted dryer air prior to discharging said air through said indoors exhaust opening, said scrubber means including a plurality of partitions forming an elongated entry flow passage and an intermediate flow passage, said entry flow passage having one end in communication with said inlet port and the opposite end in communication with said intermediate flow passage, said intermediate flow passage being of larger cross-sectional area than said entry flow passage, said scrubber means further including an enlarged plenum for reducing the velocity of flow of the dryer air stream through said chamber, baffle means substantially dividing said plenum into at least two sections, and a plurality of flow passage means extending through said baffle means, said sections being in fluid communication with one another through said plurality of flow passage means, said intermediate flow passage communicating with one of said sections and said indoors exhaust opening communicating with the other of said sections.



4,434,565

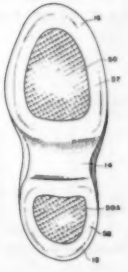
NON-SLIP OVERSHOE

Robert D. Haley, 2525 Robb Cir., Lakewood, Colo. 80215

Continuation-in-part of Ser. No. 134,192, Mar. 27, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,096

Int. Cl.³ A43B *1/10, 3/16, 13/26*

U.S. Cl. 36—7.3 **7 Claims**



1. An overshoe of the kind to be worn over the normal shoes of a wearer, comprising:

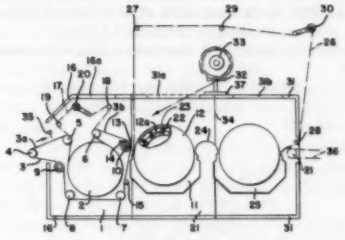
a. an upper;
b. a sole connected to the upper around the periphery of the sole and formed of resilient, flexible material;
c. metal plate means for improving traction on slippery surfaces removably attached to the lower surface of said sole, said plate means extending throughout a substantial portion of the sole and comprising an upper surface and a lower surface, and having a plurality of projections extending outwardly therefrom substantially beyond said lower surface of said plate means; and
d. metal plate attachment means for removably attaching said metal plate means to said sole;
wherein said metal plate attachment means comprises resilient flap means fixedly attached to the lower surface of said sole for stretchably receiving said metal plate means.

4,434,566

LAUNDRY MANGLE WITH ROLL COVERING REEL

Theo Krauss, Aue; Ludwig Herrmann, Bockau, and Konrad Berger, Schneeberg, all of German Democratic Rep., assignors to VEB Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Jun. 2, 1982, Ser. No. 384,320
Claims priority, application German Democratic Rep., Aug. 3, 1981, WPD06F/232327
Int. Cl.³ D06F *69/02, 67/02*
U.S. Cl. 38—8 **5 Claims**



1. A smoothing and drying apparatus for damp laundry, comprising
(A) at least one mangle cylinder and corresponding mangle trough,
(B) a frame on which said mangle cylinder and trough (A) are arranged,
(C) at least one revolving laundry guiding belt extending around said mangle cylinder (A) for guiding laundry through said apparatus for smoothing and drying,
(D) at least one shifting device around which said revolving laundry guiding belt passes, for directing said laundry guiding belt back to receive more laundry and guide said laundry to be smoothed and dried, and
(E) a covering adapted to be wound around said mangle cylinder, wherein the improvement comprises
(F) a device for winding and unwinding said covering around said cylinder, said device (F) positioned above said mangle cylinder (A) and below a portion of said revolving laundry guiding belt (C) passing around said shifting device (D).

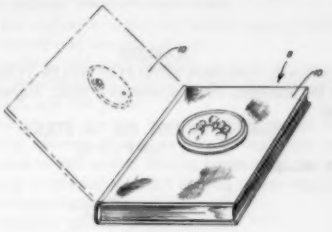
4,434,567

MEMORABILIA REPOSITORY

Robert LeVeau, Overland Park, Kans., assignor to Hallmark Cards, Inc., Kansas City, Mo.

Filed Apr. 19, 1982, Ser. No. 369,982
Int. Cl.³ B42D *3/12*
U.S. Cl. 40—157 **6 Claims**

1. A repository for memorabilia having a front cover which is movable between open and closed positions, said front cover being provided with an opening therein, a housing for a sound emitting device disposed within said opening and a sound emitting device within said housing which emits sound when the front cover is in open position, said housing being formed of top and bottom housing sections adapted for snap fit engagement with each other, said bottom housing section being a generally flat element of a size larger than the opening in the front cover and sufficient to conceal said opening and having



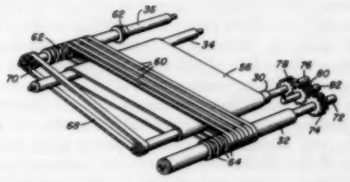
a plurality of upstanding positioning members spaced to hold the sound emitting device by frictional engagement therewith, said top housing section being a generally flat or convex element of a size larger than the opening in the front cover sufficient to conceal said opening and having a plurality of legs therefrom adapted for snap fit engagement with said bottom section to form a unitary structure and to clamp therebetween said front cover.

4,434,568

GRAPHIC DISPLAY ASSEMBLY FOR DYNAMIC PROGRAM PRESENTATION

Emilio C. Guerrero Q., Av. Francisco Miranda (California Norte) Centro Comercial Puerta del Este Local 16-B, Caracas, Venezuela

Continuation-in-part of Ser. No. 74,830, Sep. 12, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 312,121
Int. Cl.³ G09F *11/12*
U.S. Cl. 40—518 **10 Claims**



1. A graphic representation assembly comprising a panel, a program carrying member mounted in said panel and presenting a fixed representation of a program, multiple movable coplanar tapes overlying said program carrying member and the fixed representation of a program, said tapes being transparent for a viewing of said fixed representation therethrough, said tapes including representations thereon coordinated to the fixed representation, means for moving said tapes relative to said program carrying member and said fixed representation and for varying the relationship between the representations on the tapes and the fixed representation to accommodate program changes, said means for moving the tapes relative to said fixed representation including first means for moving said tapes simultaneously, and second means for moving said tapes individually, a pair of laterally spaced rotatably mounted outer shafts, a first one of said outer shafts having multiple reels rotatably mounted thereon, each reel having one of said tapes extending thereabout, each of said tapes also extending about

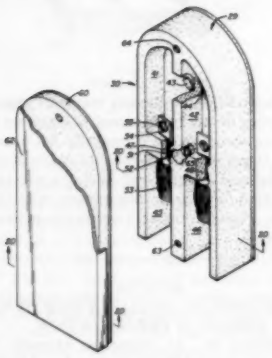
the second outer shaft, external control means for rotating said second outer shaft and the tapes thereon to define said first means for moving said tapes simultaneously, said reels being independently manually rotatable to define the second means for moving said tapes individually, and means for adjusting said program carrying member relative to the direction of movement of the tapes.

4,434,569

CONNECTOR HOUSING FOR NEON TUBING

Robert W. Minogue, 25200 Carlos Bee Blvd., Hayward, Calif. 94542

Filed Jun. 11, 1981, Ser. No. 272,630
Int. Cl.³ G09F *13/22*
U.S. Cl. 40—545 **7 Claims**



1. A connector for receiving the paired ends of conductive neon tubing for mounting to a sign backing, said connector comprising in combination: a dielectric housing having a side exposed to said sign backing; said side having a recess therein; said recess in cooperation with said sign backing defining a common cavity sufficient to receive and split electrical conduit into two conductors; paired dielectrically isolated side-by-side tube receiving chambers extending in spaced-apart parallel relation to said side of said dielectric housing and opening to the exterior of said housing; each of said tube receiving chambers having tube connector means disposed interiorly thereof for making an enclosed electrical connection to an inserted neon tube; dielectrically isolated paired paths for threading each of said conductors between said common cavity at one end and one of said neon tubes at the other end; and connection means interior of said connector for connecting said tube connector means to said conductors.

4,434,570

ADVERTISING HOLDER

Johannes Roos, Wateringen, Netherlands, assignor to Rollex B.V., The Hague, Netherlands

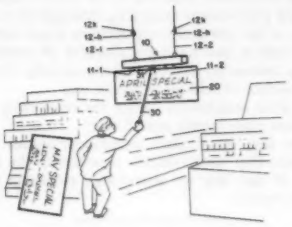
Filed May 10, 1982, Ser. No. 376,449
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—617 **10 Claims**

1. An advertising holder comprising

a housing;

movable suspension means for controllably suspending said housing from a surface;

means for releaseably securing an advertising appendage to said housing whereby the position of said advertising appendage can be selectively adjusted with respect to a viewer and said appendage can be replaced as desired;



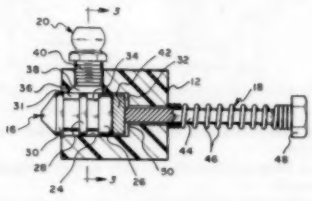
wherein the movable suspension means includes a spring loaded cylinder contained within said housing for regulating the position of said housing.

4,434,571

DEVICE FOR LUBRICATING MUZZLE-LOADING BULLETS AND METHOD FOR HANDLING AND LOADING THE BULLETS

Warren V. Eisenhuth, 113 Dorchester Dr., Vincentown, N.J. 08088

Filed Aug. 2, 1982, Ser. No. 404,568
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—90 **6 Claims**



1. A device for lubricating muzzle-loading bullets, having a front ring and at least one rear ring forming at least one groove to be filled with lubricant, the device comprising:

(a) a housing body,

(b) a cylindrical chamber opening one end of the body and terminating at a chamber end in the body,

wherein the depth of the chamber to the end is longer than the distance from the front ring to the base of the longest bullet to be inserted into the chamber, and

wherein the diameter of the chamber opening is large enough to allow the rear ring or rings to push fit into the chamber but small enough to prevent the front ring from entering the chamber,

(c) a lubrication entrance port means in the body to receive lubricant

(d) a lubrication charging chamber distribution means in the body in flow communication with the port means and the groove or grooves in the bullet, when it is placed in the cylindrical chamber,

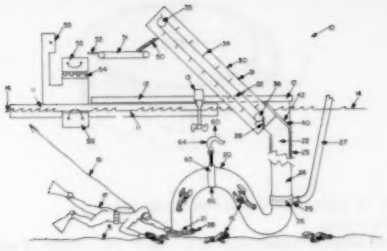
(e) a plunger piston means attached in the body located at the end of the cylindrical chamber, capable of moving against the base end of the bullet during lubrication and of pushing and ejecting the lubricated bullet.

4,434,572

RETRIEVAL OF LOBSTERS AND OTHER OBJECTS

William W. Sheldon, R.F.D. #2, Box 292, Ellsworth, Me. 04605, and Theodore G. Axford, Millbridge, Me., assignors to William W. Sheldon, Ellsworth, Me.

Filed Mar. 23, 1981, Ser. No. 246,599
Int. Cl.[3] A01K *80/00*
U.S. Cl. 43—6.5 15 Claims



1. Apparatus for lifting lobsters and similar objects from the bottom or floor of a lobster pound or other water body to the surface of the water and for handling the objects above the water surface for delivery above said surface comprising:

flexible passageway means having a length at least sufficient to extend from the bottom to the water surface and having a diameter sufficient to accommodate objects to be lifted, said passageway means having an open inlet end for movement adjacent the bottom and an open outlet end for positioning adjacent the water surface;

conveying means for receiving objects adjacent the water surface and delivering said objects above the surface of the water;

means for establishing a flow of water upward from the bottom to the water surface in the flexible passageway means whereby objects are entrained in the water flow and lifted to the surface; and

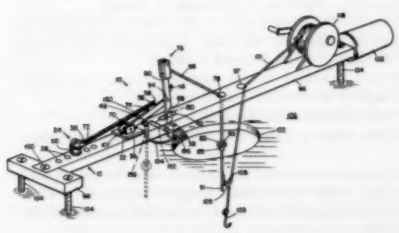
coupling guide means operatively arranged for coupling the outlet end of the flexible passageway means to the conveying means and for guiding and directing objects lifted to the surface onto said conveying means, said coupling guide means comprising chamber means having an angled cover surface, said angled cover surface operatively arranged and angled for directing objects lifted to the water surface onto the conveying means, said angled cover surface formed with openings for passing water away from the conveying means.

4,434,573

FISHING APPARATUS

Vincent B. Hodshire, 2701 NE. Adams St., Peoria, Ill. 61603

Filed Sep. 16, 1982, Ser. No. 418,684
Int. Cl.[3] A01K *91/06, 97/12*
U.S. Cl. 43—15 2 Claims



1. A fishing apparatus comprising:

a main support member;

a first member connected to said main support and movable between first and second positions;

a trigger member connected to said first member;

an extension connected to said trigger, said extension including a pair of spaced apart members having an axle extending therethrough;

means for retaining said trigger and said first member in said first position;

means for resiliently urging said trigger and said first member toward said second position;

a first guide in said main support;

a wire releasably connected to said axle and extending through said first guide;

first and second limiting means carried by said wire for limiting movement of said wire through said guide in response to said second limiting means engaging said first limiting means and said first limiting means engaging said main support member;

a reel mounted on said main support;

a second guide in said main support;

a fishing line extendably connected to said reel and extending through said second guide;

means connected to said wire for releasably engaging said second line; and

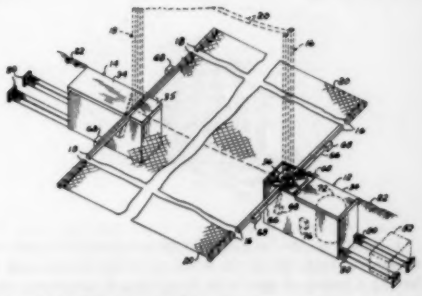
means for releasably locking said trigger in said first position, said means including a lock pin urged through an aperture formed in said main support member adjacent said means for retaining said trigger.

4,434,574

BIRD ENVIRONMENTAL INSPECTION TRAP

Calvin G. Benito, Rte. 2, Box 168, Pauls Valley, Okla. 73075

Filed Jun. 28, 1982, Ser. No. 393,200
Int. Cl.[3] A01M *23/02*
U.S. Cl. 43—63 5 Claims



1. A wild bird trap, comprising:

a pair of spaced-apart housings;

frame means within each housing;

a pair of net arms extending transversely of the respective housing in longitudinally aligned relation and pivotally connected at one end portion with said frame means for vertical pivoting movement of the other end portion of said pairs of net arms in unison from a horizontal unsprung position to an upright position;

netting extending between said housings and connected with each pair of arms;

pressure cylinder means within each housing and operatively connected with each net arm of said pairs of net arms for pivoting each pair of net arms to a sprung position; and,

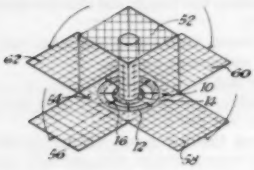
remotely operated control means for actuating said pressure cylinder means.

4,434,575

MARINE TRAP SENSING SYSTEM

Arthur W. Pearson, 2045 SW. 17 Cir., Deerfield Beach, Fla. 33441

Filed Sep. 29, 1982, Ser. No. 427,690
Int. Cl.[3] A01K 69/00
U.S. Cl. 43—100 9 Claims



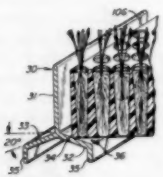
1. A saline water animal sensing system comprising:
a circuit closure means normally open for indicating entry across said closure means,
an electrical current producing source connected to each said closure means,
electronic circuit means for annunciating a closed circuit across said circuit closure means,
said electronic circuit means comprising means for preventing current flow across said circuit closure means due to the immersion of the circuit closure means in saline water.

4,434,576

SUPPORT SYSTEM FOR PLANTING TRAYS

Owen D. Sowerwine, Salinas, Calif., assignor to Castle & Cooke Technicultare, Salinas, Calif.

Filed May 10, 1982, Ser. No. 376,796
Int. Cl.[3] A47C 7/00
U.S. Cl. 47—39 5 Claims



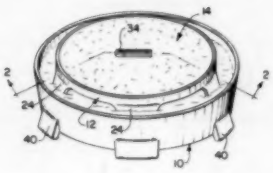
1. A support rail for use in forming a system for supporting a planting tray during an initial growing period, said tray having a matrix of apertures therethrough containing seeded soil plugs, said support rail comprising:
a horizontally extending, vertically disposed web member;
first and second tray-support members projecting from opposite sides of said web member at its lower extremity and extending the length thereof, each said tray-support member being formed to present a sloped planar surface at a downward angle to the horizontal; and
first and second vertically disposed, spaced-apart standoff members secured to said tray-support members at the undersides thereof and extending downward therefrom, said standoff members terminating at their lower extremities in parallel edges, whereby said rail engages an underlying rail-supporting structure only at the parallel edges of said standoff members and whereby the bottoms of apertures in said matrix closest to an edge of said planting tray will be exposed when said planting-tray edge rests along one of said planar surfaces.

4,434,577

CAPILLARY DISC AND SUPPORT THEREFOR

Reinhold Holtkamp, Werther Strasse 112, 4294 Isselburg, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,964
Int. Cl.[3] A01G 25/00
U.S. Cl. 47—81 7 Claims



1. A plant watering device comprising:
(a) a tray,
(b) support means adapted to rest on the bottom of said tray, said support means including a support disc and a plurality of arcuately spaced legs extending downwardly and outwardly from said disc so as to elevate said disc from the bottom of the tray, said disc being formed with an opening therein,
(c) means for positioning and locking said support means in said tray so as to prevent relative rotation between said support means and said tray, said positioning and locking means comprising water-tight pockets formed in said tray at arcuately spaced locations therearound corresponding to the location of said legs, said legs extending into said pockets for aligning said support means and preventing relative rotative movement between said support means and said tray, said pockets extending below the bottom wall of said tray for supporting the bottom of said tray above a supporting surface, and
(d) pad means constructed of water absorbent material positioned on said disc, said pad means having a movable tab hinged at one end thereof to said pad means and aligned with and commensurate in size with said opening in said disc, said tab being adapted to be bent downwardly through said opening in said disc for submergence in the water in the tray,
whereby water is transmitted by capillary action from said tab to and uniformly throughout said pad for providing water to a pot positioned on said pad.

4,434,578

AUTOMATIC TRAFFIC CONTROL GATE

Raphael J. Rumpz, 33863 Cornelissen, Sterling Heights, Mich. 48077

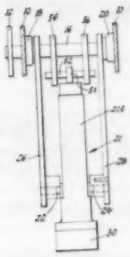
Filed Jun. 17, 1982, Ser. No. 389,180
Int. Cl.[3] E01F 13/00; E05F 11/24
U.S. Cl. 49—49 2 Claims

1. An automatic traffic control gate, comprising:
support means;
a shaft rotatably mounted on the support means;
an arm carried on the shaft so as to be movable therewith as the shaft is being rotated from a generally horizontal, lower position toward a raised position;
power means mounted in the support means, the power means having a rotatable output member;
an outer tube mounted on the support means;
an inner tube telescopically, slideably mounted in the outer tube;
a pair of trunnions mounted on opposite sides of one of said tubes, and a pair of elongated hangers having their ends connected to the shaft and their lower ends journaling the trunnions;
lever means connecting one of said tubes to the shaft such that as the inner tube and the outer tube are moved in a

relatively slideable motion in a first direction, the shaft is rotated in a first direction to raise the arm, and as the inner tube and the outer tube are moved in a relative motion in the opposite direction, the shaft is rotated in the opposite direction to lower the arm;

an elongated screw disposed in said inner tube;

a ball nut mounted in the inner tube and connected to the screw to longitudinally move the inner tube with respect



to the outer tube in either said first direction or said second direction depending upon the direction the screw is being rotated; and

slip clutch means connected between the power means and the screw to rotate it along its longitudinal axis but to permit the power means output member to rotate with respect to the screw whereby the output member is rotatable independently of the motion of said shaft.

4,434,579

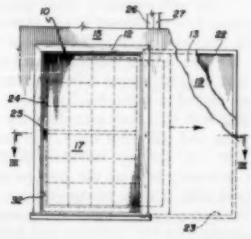
INSULATING STRUCTURE

John S. Murphy, 167 Webbers Path, West Yarmouth, Mass. 02673

Continuation of Ser. No. 215,806, Dec. 12, 1980, which is a continuation of Ser. No. 44,355, May 31, 1979. This application Mar. 19, 1982, Ser. No. 359,949

Int. Cl.³ E05B *65/04*

U.S. Cl. 49—63 **4 Claims**



1. Insulating structure for use with a window which is enclosed within a rectangular window frame which defines a rectangular window opening, said insulating structure comprising:

(a) a rigid rectangular envelope having an opening along one side, the envelope being adapted to being fastened in a wall with the opening facing the window opening, and located in a plane that is offset from the plane of the window, the envelope being substantially air-tight except for the said opening, the envelope consisting of two similar rigid rectangular sheets held in spaced parallel relationship by spacer blocks extending around three side edges, the fourth side edge being free of a spacer block and constituting the said opening, the side of each sheet which faces the interior of the pocket having a flat smooth continuous surface,

(b) a main sheet of insulating material slidable in the envelope from an inoperative position in which it is entirely enclosed in the envelope to an operative position in which it is substantially outside the envelope and is co-extensive with the window opening and in front of the window, and

(c) a groove which extends entirely around the inside of the window frame except for said opening for receiving the edges of the main sheet when the main sheet lies within said window opening to form a tight seal around the edges of the main sheet.

4,434,580

DOOR, ESPECIALLY FOR MOTOR VEHICLES

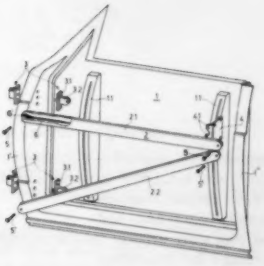
Ernst Engelsberger, Glonn, and Ralf-Thilo Schulz, Putzbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 28, 1981, Ser. No. 334,641

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102328

Int. Cl.³ B60J *5/04*

U.S. Cl. 49—502 **7 Claims**



1. A door, especially for a motor vehicle, comprising door frame means including vertically extending frame members, hinge means operatively secured to one frame member of said vertically extending frame members, a lock base plate operatively secured to the other frame member of said vertically extending frame members, a first substantially horizontally extending rail (2.1) having a longitudinal axis, first journal bolt means (5) for journalling said first rail with one end thereof to a respective one of said hinge means and with the other rail end to said lock base plate, a second rail (2.2) extending at an angle to the first rail, second journal bolt means (5') for journalling said second rail with one end thereof to the respective other hinge means and with the other rail end also to the lock base plate, said first and second journal bolt means (5, 5') extending also substantially horizontally and perpendicularly to the respective rail end for movably mounting the rail ends so that the first and second rails are substantially free of deformations under load condition until the brake stress is reached, and irreversibly expandable cable means secured with their/ends to said first journal means whereby said cable means extend substantially in parallel at least to said first rail.

4,434,581

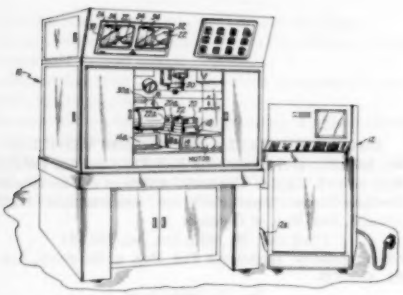
APPARATUS ADAPTED FOR AUTOMATIC OR SEMI-AUTOMATIC FABRICATION OF ULTRA-PRECISION OPHTHALMIC LENSES, E.G., CONTACT LENSES

Robert G. Spriggs, St. Petersburg, Fla., assignor to Automated Optic, Inc., N. Saint Petersburg, Fla.

Continuation of Ser. No. 180,323, Aug. 22, 1980, abandoned, which is a continuation of Ser. No. 928,973, Jul. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 821,162, Aug. 2, 1977, abandoned. This application May 11, 1982, Ser. No. 377,105

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—67 16 Claims



1. An apparatus for generating a microinch optical surface on an optical lens precursor to yield a lens for proximate contact with an eyeball, comprising

a substantially heavy table bed;

a fluid bearing work support spindle including an air collet for holding a lens precursor;

a first air-bearing slide supported on said table bed and adapted for rectilinear translation along a first horizontal axis that is in a plane parallel to the axis of rotation of said spindle;

a circular tipped cutting tool mounted on said first slide;

a second air-bearing slide supported on said table bed and adapted for rectilinear translation along a second horizontal axis that is in said plane and perpendicular to said first axis, said fluid bearing work support spindle being mounted upon said second slide;

a pair of D.C. torque motors respectively coupled to said first and second slides by means of zero backlash lead screws to provide translational movement of said slides along their respective axes;

a computer control system for generating control signals for said motors to provide predetermined coordinated movement of said cutting tool and said spindle in accordance with the mathematical function describing the geometry of the optical surface to be generated only in a rectangular coordinate system; and

electro-optical encoders for monitoring the positions of said first and second slides.

4,434,582

GLASS TRIMMING CUTTER WITH ROLLER CONVEYOR

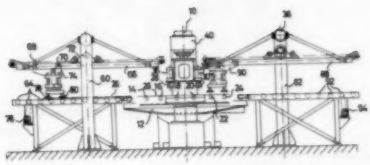
Gottfried Strauss, Heiligenhaus, and Horst Schumann, Ratingen, both of Fed. Rep. of Germany, assignors to Sack Glastechnik GmbH, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 967,869, Dec. 8, 1978, abandoned. This application Nov. 4, 1980, Ser. No. 203,970

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756443

Int. Cl.³ B24B *17/02*

U.S. Cl. 51—101 R 1 Claim



1. Apparatus for automatically cutting the edges of generally planar glass panes, comprising:

a generally circular table including a conveyor track for transporting the glass planes in a conveying direction and for providing a substantially horizontal support for the glass panes, said conveyor track extending over substantially the entire diameter of said table between a loading end at which the glass panes are fed onto said track and an unloading end at which the glass panes are discharged from said track, said table being arranged for rotation about a vertical axis which is normal to the surfaces of the glass panes;

means for rotating said table about said vertical axis at a desired rate;

gripping means responsive to rotation of said table for releasably gripping the glass panes on said table to fix the glass panes against movement relative to said table when said table is rotated and the glass panes are cut;

means for cutting the edges of the glass panes to a desired contour as said table is rotated from an initial position to an end position;

a feed conveyor fixed with respect to the rotation axis of said table and arranged to be aligned in said conveying direction with the loading end of said conveyor track when said table is in either of said initial and said end positions for horizontally supporting and delivering the glass panes to the loading end of said conveyor track;

means associated with said feed conveyor for loading the glass panes onto said conveyor track, said loading means including a first feed carriage including at least one suction cup for releasably holding the glass panes;

a first track fixed with respect to the rotation axis of said table and arranged parallel to and above said feed conveyor for guiding said first feed carriage between a first end position whereat said first feed carriage grasps a glass pane to be cut and a second end position whereat said first feed carriage release the glass pane when the glass pane is loaded onto said conveyor track and said gripping means is operated, said first track extending above and parallel to said conveyor track of said table for a distance of about one-third the length of said conveyor track;

a discharge conveyor fixed with respect to the rotation axis of said table and arranged to be aligned in said conveying direction with the unloading end of said conveyor track when said table is in either of said initial and said end positions for horizontally supporting and discharging the glass panes from the unloading end of said conveyor track;

means associated with said discharge conveyor for unloading the glass panes from said conveyor track, said unloading means including a second feed carriage including at

least one suction cup for releasably holding the glass panes;

a second track fixed with respect to the rotation axis of said table and arranged parallel to and above said discharge conveyor for guiding said second feed carriage between a first end position whereat said second feed carriage grasps a glass pane which has been cut on said conveyor track when said gripping means releases the cut glass pane, and a second end position whereat said second feed carriage releases the cut glass pane for further processing, said second track extending above and parallel to said conveyor track of said table for a distance of about one-third the length of said conveyor track;

means including a rope drive arrangement for moving said first and said second feed carriages along said first and said second tracks, respectively, in corresponding relationship with rotation of said table so that said feed carriage delivers a first glass pane to be cut to said table while said second feed carriage simultaneously discharges a second, cut glass pane from said table, and said first feed carriage thereafter returns to deliver a third glass pane to be cut to said table while said second feed carriage simultaneously returns to discharge the first, then cut glass pane from said table; and

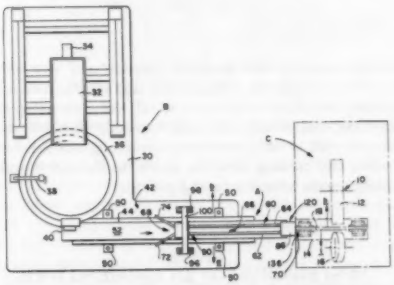
a cantilever support arm extending over said table, wherein said gripping means is mounted to said support arm and includes a number of uniformly distributed, downwardly projecting suction cups.

4,434,583

AUTOMATICALLY ADJUSTABLE WORKPIECE GUIDE AND FEED MECHANISM

Warren C. Burgess, Jr., 31922 Lake Rd., Avon Lake, Ohio 44012

Filed Jul. 6, 1981, Ser. No. 280,904
Int. Cl.³ B24B 5/18
U.S. Cl. 51—103 TF **9 Claims**



1. An adjustable feed mechanism for feeding workpieces to a centerless grinder wherein said grinder includes a work rest generally intermediate the circumferential grinding surface of a grinding wheel and a regulating wheel and wherein at least said work rest and regulating wheel are selectively adjustable toward and away from said grinding surface to accommodate variations in the grinding wheel dimensions, said feed mechanism comprising:

means defining a workpiece flow path for grinding said workpieces in a desired orientation therein from a first end toward a second end spaced therefrom, said first end being cooperably associated with a workpiece supply area and said second end operably communicating with said work rest for feeding workpieces thereto;

first mounting means adjacent said first end for supporting said first end while allowing selective movement of said workpiece flow path defining means generally laterally of the flow path defined thereby;

second mounting means adjacent said second end for fixedly securing said second end for movement with said work rest, whereby said flow path is automatically moved generally laterally in response to generally lateral movement of at least said work rest toward and away from said grinding wheel grinding surface; and,

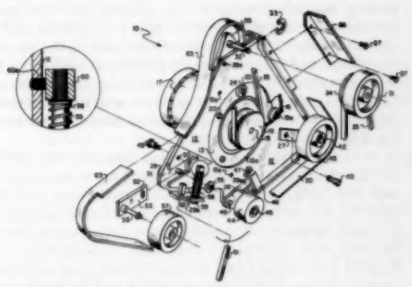
wherein said flow path defining means comprises a pair of elongated spaced apart guide members defining said flow path therebetween and further includes movable conveyor means therebeneath for defining an elongated flow path bottom at least between said first and second ends, said conveyor means being generally stationarily mounted relative to said workpiece supply area in spaced and unconnected relationship to said guide members and said work rest with said guide members being movable generally laterally of said flow path bottom in response to generally lateral movement of said work rest.

4,434,584

TURRET BELT GRINDER

Aaron P. Rasmussen, 9606 Candy La., La Mesa, Calif. 92041

Filed Jul. 16, 1981, Ser. No. 284,018
Int. Cl.³ B24B 21/12
U.S. Cl. 51—135 R **13 Claims**



1. A turret belt grinder comprising:

a drive shaft having a longitudinal x-axis;

means for rotating said drive shaft;

a turret frame oriented substantially perpendicular to said drive shaft;

a ring plate fixedly mounted with respect to said means for rotating said drive shaft, said drive shaft and said ring plate sharing a common axis;

means for rotating said turret frame through 360 degrees which maintains it with 360 degrees rotational concentricity with the x-axis of said drive shaft comprising at least three flanged bushings each of which is secured to the rear surface of said turret frame at a predetermined point by a shoulder bolt, said flanged bushings revolve on said bolts thereby acting as rollers and track on the radial edge of said ring plate;

at least three wheels, each of which is rotatably mounted on its own individual axle;

means for mounting said axles on said turret frame at points laterally spaced from one another and said axles being oriented substantially parallel to the axis of said drive shaft;

a closed loop grinding belt passing around the perimeter of the geometric configuration formed by said laterally spaced wheels;

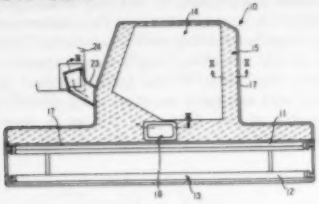
one of said plurality of wheels being a drive wheel; and

means for transmitting the rotational motion of said driveshaft to said drive wheel to rotate it, thereby driving said grinding belt around its closed loop path.

4,434,585
BED FOR GRINDING MACHINE

Kenichi Munekata; Kunihiko Unno, and Yasuo Suzuki, all of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 3, 1981, Ser. No. 270,024
Claims priority, application Japan, Jun. 6, 1980, 55-79677[U]
Int. Cl.³ B24B *41/00*
U.S. Cl. 51—166 R **2 Claims**



1. A bed for a grinding machine having a table and a wheel head and comprising:

a bed body having at an upper surface portion thereof a table support portion for slidably supporting said table of said grinding machine, a wheel head support portion for supporting said wheel head of said grinding machine, and a coolant receiving portion including a peripheral wall of said bed body, a trough portion surrounding the remainder of said bed body inside said peripheral wall and a flat surface portion formed between said support portions and recessed from said support portions and said peripheral wall, said peripheral wall projecting from and surrounding said flat surface portion;

a layer of resin mortor formed on at least said flat surface portion defining said coolant receiving portion, wherein said bed body further comprises a peripheral wall and wherein said coolant receiving portion further comprises a trough shaped portion and a flat surface portion formed between said support portions and recessed from said support portions and said peripheral wall, said peripheral wall projecting from and surrounding said flat surface and said coolant receiving portion including an exhaust hole formed therein for exhausting coolant, said flat surface portion being sloped downwardly toward said exhaust hole and wherein said bed body has an air gap formed therein;

a coolant exhaust conduit communicating with a top surface portion of said exhaust hole for conducting coolant; and

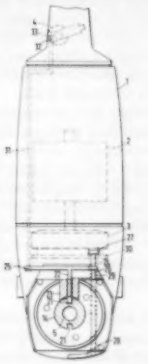
a coolant shoe mounted in said bed body extending into said air gap and connected to said coolant exhaust conduit for exhausting coolant outside said bed body.

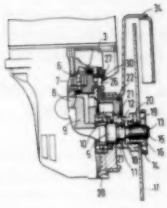
4,434,586
MACHINE TOOL, ESPECIALLY A HAND-HELD POWER TOOL WITH A TURNABLE CLAMPING ELEMENT FOR CLAMPING A TOOL ON THE TOOL SPINDLE

Thomas Müller, Erlangen; Fritz Schädlich, and Manfred Stä bler, both of Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,681
Int. Cl.³ B24B *23/02*
U.S. Cl. 51—170 PT **18 Claims**

1. In a machine tool, especially a hand-held power tool, a combination comprising a housing; a tool spindle mounted in the housing for rotation about its axis; means on the tool spindle including a clamping element turnably mounted on said spindle for clamping a tool on the latter for rotation therewith; manually operated means for turning said spindle about its axis; arresting means movable between a rest position and an arresting position for holding said clamping element against rotation during turning of said spindle for clamping or for releasing a tool, said manually operated turning means being movable between an inactive position and an active position turning said tool spindle and means cooperating with said manually operated turning means and said arresting means for moving said turning means to said active position during movement of said



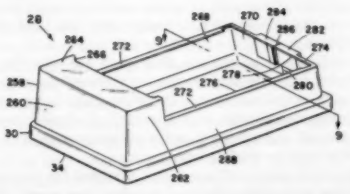


arresting means to said arresting position and vice versa; a drive motor operatively connected to said spindle; a switch for switching said drive motor on sand off; and connecting means connecting said switch with said manually operable turning means and said arresting means for switching said drive motor off when said turning means is moved to the active and said arresting means to said arresting position.

4,434,587
DUST SHROUD FOR AN ABRADING TOOL

Robert J. McDougall, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 1, 1981, Ser. No. 298,312
Int. Cl.³ B24B *23/06, 55/06*
U.S. Cl. 51—170 MT **7 Claims**



1. A dust shroud for a sanding tool having a housing, comprising:

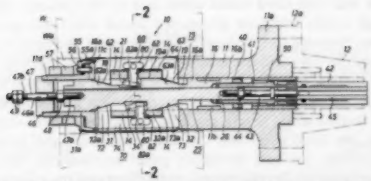
(a) a one-piece resilient skirt having a wall extending about the periphery of the housing;
(b) said skirt wall being split into two end portions terminating in transverse edges in opposing end-to-end abutting alignment defining a joint;
(c) the wall further having an upper edge; and
(d) the joint including connecting means integrally formed on said end portions adjacent said transverse edges for aligning said end portions during their connection and for enabling rapid disconnection by their counterrotation in a single plane outwardly from each other about a point defined by the intersection of said joint with said wall upper edge.

4,434,588

HONING HEAD FOR HIGH-SPEED OPERATION

Minoru Wada; Isao Arai; Takeshi Okubo, all of Saitama, and Yoshiaki Mori, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,207
Claims priority, application Japan, Sep. 10, 1980, 55-125521
Int. Cl.³ B24B *33/08, 33/02*
U.S. Cl. 51—344 **4 Claims**



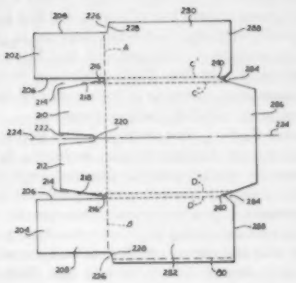
1. A honing head for high-speed operation comprising a hollow holder having a plurality of guide slots angularly spaced from each other in the circumferential direction thereof, at least one cone shaft axially slidably mounted in said hollow holder and having at least one radially outward tapered portion extending axially thereof, and a plurality of honing stone supports radially movably disposed respectively in said guide slots, each of said honing stone supports having at least one radially inward cam surface held in contact with said tapered portion of said cone shaft, whereby said honing stone supports are radially movable in response to axial movement of said cone shaft, characterized in that each of said honing stone supports is connected to said cone shaft by at least one connector having one end connected to said honing stone support and the other end slidably received in a groove defined in said cone shaft, said groove being inclined in the same direction and at the same angle as said tapered portion of said cone shaft, said at least one cone shaft comprising a rough-finishing cone shaft and a finishing cone shaft which are independently axially movable in said hollow holder and have tapered portions, said honing stone supports comprising rough-finishing honing stone supports and finishing honing stone supports which are inserted alternately in said guide slots, said rough-finishing honing stone supports having cam surfaces held in contact with said tapered portions of said rough-finishing cone shaft, and said finishing honing stone supports having cam surfaces held in contact with said tapered portions of said finishing cone shaft.

4,434,589

ASPHALT COMPOSITION HIP AND RIDGE COVER

Bennie Freiborg, Champion Roof Company, 11764 Sheldon St., Sun Valley, Calif. 91352

Filed Sep. 19, 1980, Ser. No. 188,876
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—57 **40 Claims**



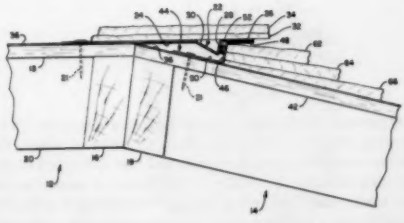
1. An asphalt composition ridge cover having a longitudinal centerline and comprising:
a generally rectangular center body portion having a first end, a second end, a first edge, and a second edge;
a first pair of foldable tabs integrally formed with said first end, each such tab having a width extending from proximate said longitudinal centerline to approximately midway between said longitudinal centerline and said respective first and second edge, each such tab having a length extending perpendicular to said first end and being separated from the other such tab by a notch extending from the free end of said first pair of foldable tabs to a point just short of a line coincident with said first end;
a first edge tab defined by that portion of said central body portion which lies between said first edge and a first fold locating means lying parallel to said longitudinal centerline and lying proximate the midpoint between said first edge and said longitudinal centerline;
a second edge tab defined by that portion of said central body portion which lies between said second edge and a second fold locating means lying parallel to said longitudinal centerline and lying proximate the midpoint between said second edge and said longitudinal centerline.

4,434,590

FLASHING STRUCTURE FOR GEODESIC DOME STRUCTURES

Roger B. Wheeler, 2604 N. 4th St., Clinton, Iowa 52732

Filed Jan. 16, 1981, Ser. No. 225,856
Int. Cl.³ E04D *1/38*
U.S. Cl. 52—58 **7 Claims**



1. A building construction which includes:
a first member having a generally planar first side;
a second member having a generally planar side dimen-

sioned and configured for engagement with said first side in abutting planar contact, said first and second members are generally planar and are disposed in oblique relationship;

a first flashing element disposed on said first member and extending along said first side, said first flashing element having a laterally extending step disposed intermediate first and second generally planar sections, said first generally planar section being fixed to said first element and said laterally extending step being disposed in generally parallel relationship to said first side, said first generally planar section of said first flashing element being disposed in oblique relationship to at least a part of said step shaped portion of said first flashing element;

a second flashing element disposed on said second member, said second flashing element including first and second generally planar surfaces disposed proximate to a step shaped section thereof, said step shaped portion thereof extending in generally parallel relationship to said second side, said step being disposed spaced away from said second side and above a portion of said second member; and

said step shaped surface of said first flashing element is disposed in substantially nested relationship to said step shaped surface of said second flashing element.

4,434,591

COMPONENT USEFUL IN PRODUCING A COOLING TOWER

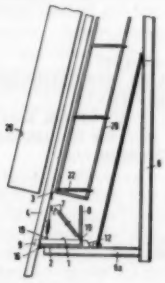
Wolfgang Zerna, Hattingen; Wilfried Krabbe, Buchschlag, and Hans Schäfer, Darmstadt, all of Fed. Rep. of Germany, assignors to Philipp Holzmann AG, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 974,047, Dec. 28, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,659

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759087

Int. Cl.³ E04B *1/54*

U.S. Cl. 52—73 **7 Claims**



1. A pre-cast reinforcing element a cooling tower, in which a plurality of such reinforcing elements serve as forms for receiving a suitable reinforcing material that is bonded to the reinforcing elements and to the cooling tower at spaced points on the tower, said reinforcing element comprising a plate-like element having a middle solid region and trough-like ends each open at the top and a side thereof, in which an open top central channel is provided through said middle solid region communicating with said trough-like ends for receiving said reinforcing material such as concrete.

4,434,592

HEAT AND SOUND INSULATING STRUCTURE FOR BOARDING OR OTHER NON-LOADBEARING WALL

Patrick Renéault, Garches, and Francis Ovaert, Paris, both of France, assignors to SMAC Acieroid, Paris, France

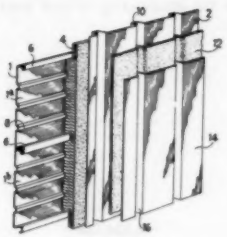
Filed Dec. 12, 1980, Ser. No. 215,923

Claims priority, application France, Dec. 24, 1979, 79 31583

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.³ E04B *1/82*

U.S. Cl. 52—145 **9 Claims**



1. A heat and sound insulating structure for boarding or other non-loadbearing wall of a premises, comprising in combination an inner first metal sheet for facing toward the interior of said premises and a second metal sheet, a heat insulating panel, said sheets having ribs projecting into the panel and intermediate portions between the ribs, the ribs of the first and second sheets being perpendicular to one another, a substantially 2–4 mm thick core of sound insulating material and a solid and thin third metal sheet, one of said second and third metal sheets being an interposed metal sheet interposed between the core and the heat insulating panel, the heat insulating panel, the core and the interposed metal sheet being in adjoining relation to one another in a sandwich assembly, the heat insulating panel being in adjoining relation to one of said first and second metal sheets, the first and second metal sheets, the core, the third sheet and the heat insulating panel being held assembled, the heat insulating panel substantially filling any space between the interposed metal sheet and the adjoining one of the first and second sheets, the intermediate portions of each of the first and second sheets having a given width and the ribs of each of the first and second sheets having a width and a depth which are each a minor fraction of the given width of the intermediate portions thereof, the core of sound insulating material being in fully adjoining relation to at least one of said metal sheets without empty spaces therebetween, and the heat insulating panel being in fully adjoining relation to at least one of said metal sheets without empty spaces therebetween.

4,434,593

WINDOW STRUCTURE OF A VEHICLE BODY

Masayoshi Horike; Haruo Yamamoto; Yukio Yamane, all of Yokosuka; Kazuhiko Yoshiyuki, Yokohama, and Toshiaki Endo, Chigasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 27, 1981, Ser. No. 257,606

Claims priority, application Japan, May 6, 1980, 55-58579

Int. Cl.³ B60J *1/02*

U.S. Cl. 52—208 **5 Claims**

1. A window structure of a vehicle body, comprising:

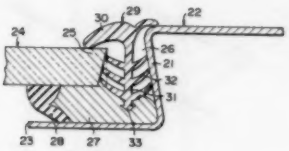
a wall portion forming part of said vehicle body and defining an opening therein;

a window panel closing said opening and having at least one edge portion extending along and spaced apart inwardly from said wall portion for forming a gap between said wall portion and the edge portion;

a body of adhesive intervening between said vehicle body

adjacent said gap and the edge portion of said window panel and securing the window panel to the vehicle body;

a resilient molding having a decorative trim portion bridging said window panel and said vehicle body for covering said gap, a stem portion integral with said decorative trim portion and extending in said gap, said edge portion and said wall portion forming therebetween said gap, said gap having an outer end adjacent said decorative trim portion and an inner end remote from said decorative trim portion, the stem portion of said resilient molding extending between said outer end and said inner end, the stem portion having adjacent said inner end of the gap a bead which is generally arrow-shaped in cross section and which is embedded in said body of adhesive, and a plurality of retrorse fins extending outwardly from both sides of said stem portion and angled toward said decorative trim portion for engagement with said edge portion of said window panel and said wall portion of said vehicle body; and



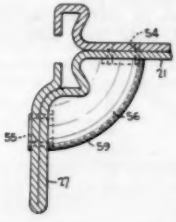
retaining means constituted by said edge portion of said window panel and said wall portion of said vehicle body, the width of said gap at said outer end being smaller than that of the gap at said inner end.

4,434,594

WINDOW FRAME OR DOOR FRAME SECTION

Robert H. Bliss, Monroe, La., assignor to Bliss Steel Products Corp., East Syracuse, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,825
Int. Cl.³ E04C 3/30; E06B 7/14
U.S. Cl. 52—209 **4 Claims**



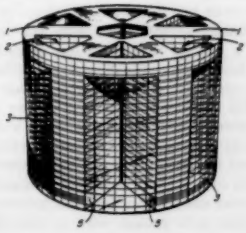
1. A frame section for a window frame or door frame structure, comprising a first roll-formed frame member of substantially L-shape in cross-section having a flat web portion, first and second flanges respectively at opposite ends of said web extending from one side thereof and converging toward one another at acute angles to the plane of said web, said flanges defining an open dovetail shape channel capable of receiving a glass molding means, a first end wall portion extending outwardly of the free end of said first flange and lying parallel to said web portion in spaced relation, a first lip extending from the free end of said first end wall portion toward and substantially perpendicular to said web portion and terminating in spaced relation from an opposite side thereof, a second end wall portion extending outwardly of the free end of said second flange and lying parallel to said web portion in spaced relation, a first abutment wall capable of supporting one side of a window pane and extending from the free end of said second end wall portion away from and substantially perpendicular to said web portion, a second lip extending from said abutment wall toward and substantially perpendicular to said web portion and terminating in spaced relation from said opposite side thereof, a second roll-formed frame member of substantially L-shape in cross-section having a flat web portion interconnected with said web portion of said first frame member and forming together with said first member a body of substantially T-shape in cross-section, third and fourth flanges respectively at opposite ends of said web of said second frame member extending from one side thereof and converging toward one another at acute angles to the plane of said another member web, said third and fourth flanges lying respectively opposite said first and second flanges and defining a dovetail shape channel capable of receiving a glass molding means, a third end wall portion extending outwardly of the free end of said third flange and lying parallel to said web portion of said second member in spaced relation, a third lip extending from the free end of said third end wall portion toward and substantially perpendicular to said web portion of said second member and terminating in spaced relation from an opposite side thereof, said first and third lips extending toward one another and having terminal ends spaced apart for defining a first groove therebetween, a first elastomeric sealing member disposed in said groove and extending outwardly of outer sides of said first and third lips and abutting against said first and third flanges to thereby define a combined weather strip and thermal strip, said first sealing member engaging said terminal ends of said first and third lips so as to be thereby retained in said first groove, a fourth end wall portion extending outwardly of the free end of said fourth flange and lying parallel to said web portion of said another member in spaced relation, a second abutment wall capable of supporting one side of a window pane and extending from the free end of said fourth end wall portion away from and substantially perpendicular to said web portion of said second member, and a fourth lip extending from said second abutment wall toward and substantially perpendicular to said web portion of said second member and terminating in spaced relation from said opposite side thereof, said second and fourth lips extending toward one another and having terminal ends spaced apart for defining a second groove, a second elastomeric sealing member disposed in said second groove and abutting against said second and fourth flanges to thereby define a thermal strip, said second sealing member engaging said terminal ends of said second and fourth flanges so as to be thereby retained in said second groove.

4,434,595

BUILDING STRUCTURE

Jean de Brabant, 465 Saint-Jean, Suite 1005, Montreal, Quebec H2Y 2R6, Canada

Filed May 21, 1982, Ser. No. 380,879
Claims priority, application Canada, Jul. 23, 1981, 382360
Int. Cl.³ E04H 1/00
U.S. Cl. 52—236.2 **16 Claims**



1. A multi-story exterior atrium building comprising:

a multi-story habitable space which in horizontal section includes at each story,

a central core, and

a plurality of habitable spokes extending radially outwardly from said central core,

a substantially transparent peripheral wall means connecting the outer ends of adjacent habitable spokes to form a plurality of enclosed exterior atria, each of said exterior atria being disposed between an associated pair of said habitable spokes, said plurality of atria being circumferentially disposed around said central core and vertically extending substantially throughout the height of said multi-story building, and

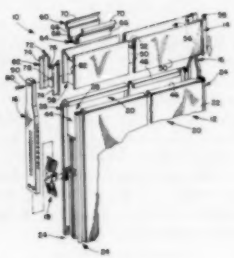
an outwardly extending side of each of said habitable spokes includes a facade bordering on an associated one of said atria and containing at least one transparent portion wherein as associated exterior atria and space external to the building may be viewed from within the spokes and wherein the exterior surface area of said habitable spokes substantially exceeds the exterior surface area of said exterior atrium building.

4,434,596

PARTITION HEAD ASSEMBLY FOR PARTITION WALL PANELS

John E. McAteer, Maple Heights; Kenneth E. Bisler, North Royalton; Jerry Ptacnik, Garfield Heights, and Richard D. Kish, Lorain, all of Ohio, assignors to Hauserman, Inc., Cleveland, Ohio

Filed Oct. 6, 1978, Ser. No. 949,133
Int. Cl.³ E04B *2/76*
U.S. Cl. 52—243.1 **29 Claims**



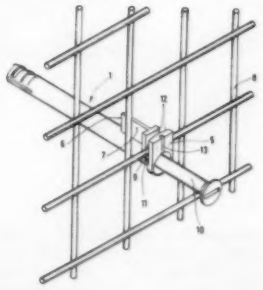
1. The combination of a partition panel, a telescoping head in the top thereof and strut means at at least one end of the head adjustably vertically secured to the partition at all vertical positions thereof, said strut means comprising a strut having an upper portion connected to said head and a lower channel-shape portion, clip means slidingly received in said lower channel-shape portion, said clip means including means for securing the same to said partition panel, said clip means further comprising resilient means for frictionally engaging said clip means with said lower channel-shape portion of said strut, said clip means comprising a body and said resilient means including a pair of resilient wings extending longitudinally from said body in opposite directions and laterally in the same direction, said lower channel-shape portion of said strut being substantially C-shape in transverse section having a web portion, leg portions extending from each vertical edge of said web portion, and inwardly extending terminal portions at the ends of said leg portions substantially parallel with said web portion and spaced apart therefrom, and said wings extending laterally from said body a distance greater than the spacing between said web portion and terminal portions whereby when received in said channel-shape portion of said strut, said wings resiliently urge said body into frictional engagement with said web portion of said lower channel-shape portion.

4,434,597

FASTENING DEVICE

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 313,754
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041697
Int. Cl.³ E05C *5/20*
U.S. Cl. 52—681 **6 Claims**



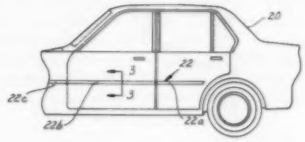
1. A fastening device for use with brickwork comprising: a dowel having a dowel front end, a prolonged neck which projects from said brickwork and anchoring means for fastening said dowel to said brickwork; a holding device arranged at said dowel front end for fastening a wire grating serving as a base for plastering, said holding device being a radially projecting cam having a slot at right angle to the longitudinal dowel axis and said slot opening corresponding to the wire thickness of said wire grating wherein said slot is comprised of a pair of surfaces, at right angle to the longitudinal dowel axis, each having a convex shape.

4,434,598

DECORATIVE MOLDINGS

Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Nov. 23, 1981, Ser. No. 323,511
Int. Cl.³ E04F *19/02*; B60R *13/02*
U.S. Cl. 52—716 **12 Claims**



1. In combination with a vehicle body panel, a decorative molding disposed against said vehicle body panel comprising a metal strip containing insulating layer on one side including the longitudinal margins and being formed into a cross-sectional shape having a main body between the longitudinal margins and in which the longitudinal margins are formed into longitudinally extending insulated beads by the margins being turned onto the side of the metal strip opposite the side containing the insulating layer and with the insulated beads being set inwardly in relation to the main body, said insulated beads having insulated faces disposed against said vehicle body panel with said main body being set outwardly from said vehicle body panel to provide a void being said main body and said vehicle body panel, said insulated faces being disposed in a common plane when viewed in cross-section through the molding, and means for attaching said molding to said vehicle body panel via said

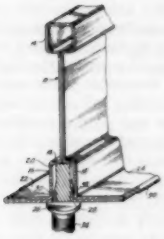
beads such that the metal of said strip remains insulated from said vehicle body panel.

4,434,599

DROP CEILING FRAME CONSTRUCTION

Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Filed Mar. 30, 1982, Ser. No. 363,603
Int. Cl.³ E04B *5/52*; E04C *3/30*
U.S. Cl. 52—729 **3 Claims**



1. A rolled sheet metal longitudinal T-frame member for a drop ceiling to support ceiling tiles or the like comprising:

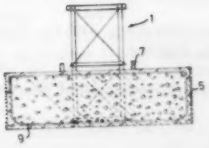
a web section formed of two sheet metal layers joined along a longitudinal edge, a channel section having two parallel side walls joined by a transverse wall, the sheet metal layers of web section being joined along a longitudinal edge to the side walls of the channel section by respective sheet metal sections forming the transverse wall, the side walls of the channel section extending parallel to and away from the web section, a pair of flange sections lying in a common plane extending perpendicular to the plane of the web section, each flange section being formed of two layers of sheet metal joined along the outer edge of the flange section, one layer of each flange section being joined along one longitudinal edge to the outer edge of a respective one of the side walls of the channel section, the flange sections projecting outwardly away from the respective side walls and forming a flat supporting surface on either side of the channel section for supporting ceiling tiles, the other layer of each of the flange sections including a lip extending into the space between the parallel side walls of the channel section, each lip terminating in an edge extending inwardly toward the transverse wall of the channel, the lips having a gap between the inwardly extending edges.

4,434,600

METHOD FOR FIXING THE ENDS OF CONCRETE COLUMNS IN CONCRETE BASES AND DEVICE FOR CARRYING OUT SAID METHOD

Henrik A. Backman, Bovägen 6, S-18143 Lidingö, Sweden

Filed Apr. 6, 1981, Ser. No. 251,318
Claims priority, application Sweden, Apr. 10, 1980, 8002718
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—741 **6 Claims**



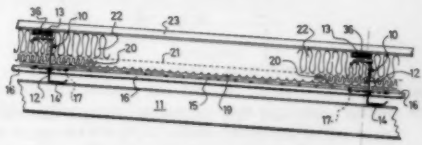
1. A method of fixing the end of a concrete column in a footing base of concrete which comprises the steps of positioning a steel basket into a first form for casting the footing base; pouring concrete into said first form to cast such base with a portion of the steel basket extending thereabove and a portion of the steel basket extending therebelow and embedded in the concrete of said base; positioning the end of the concrete column into the portion of the steel basket extending above said base; positioning a second form about said portion of the steel basket above the base; and pouring concrete into said second form to cast a concrete sheath around said portion of the steel basket and end of the column above the base, said concrete sheath being thereby integrally bonded to the end of the concrete column and to said base.

4,434,601

HEAT INSULATED ROOF STRUCTURE

Hans Zellmer, Ryetvägen 17, Hovås, Sweden 430 80

Filed Feb. 4, 1981, Ser. No. 231,431
Claims priority, application Sweden, Feb. 26, 1980, 8001473; Jul. 2, 1980, 8004896
Int. Cl.³ E04G *21/14*
U.S. Cl. 52—745 **3 Claims**



1. A method of erecting a roof structure including a number of parallel beams carrying heat insulating material covered by a watertight sheeting, each beam having a web portion and at least one flange, comprising the steps of:

(a) locating a number of rafters in spaced-apart, parallel relationship upon the flooring to be covered by said roof structure,

(b) providing spaced-apart holes in the web portions of said beams,

(c) arranging a group of said beams in spaced-apart, parallel relationship upon said rafters perpendicularly thereto and securing them to said rafters,

(d) inserting rods in said holes in the webs of said beams,

(e) fitting rigid channel members of equal length transversely between any two parallel beams upon said rods,

(f) lifting the entity of said rafters, beams and channel members to and incorporating the same in its proper positions in the roof structure, and

(g) finishing the heat insulation and the watertight sheeting thereat.

4,434,602

TRAY LOADING MACHINE

Will L. Culpepper, Tucker, Ga., assignor to The Mead Corporation, Atlanta, Ga.

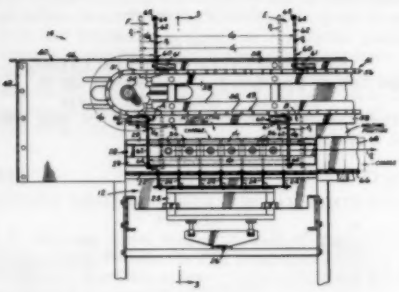
Filed Aug. 7, 1981, Ser. No. 291,020
Int. Cl.³ B65B *5/06*
U.S. Cl. 53—473 **16 Claims**

1. A tray loading mechanism for moving accumulated charges of containers from an accumulating position into trays at a loading position through the unclosed end flaps of the trays to load the trays comprising:

loading conveyor means including a plurality of pusher means movable between the accumulating and loading positions along an endless path, each of said pusher means adapted to move a charge of containers from the accumulating position into a tray at the loading position as said

pusher means moves in a first direction along the endless path;

drive means for moving said plurality of pusher means along the endless path in successive increments of movement so that all of said pusher means are first simultaneously moved along the endless path in the first direction for a first prescribed distance and then simultaneously moved along the endless path in the opposite direction for a second prescribed distance less than the first prescribed distance during each increment of movement so that said plurality of pusher means moves between the accumulating and loading positions in the first direction along the



endless path, said first prescribed distance selected to cause one of said pusher means to move a charge of containers out of the accumulating position toward the loading position and to cause one of said pusher means to load a charge of containers into the tray at the loading position during each movement of said plurality of pusher means in the first direction, and said second prescribed distance selected to cause that pusher means loading a charge of containers into the tray at the loading position to move out of interference with the unclosed end flaps on the tray during movement of said pusher means in the second direction.

4,434,603

PLANT FOR PRODUCING PALLETLESS STACKS OF PIECE GOODS, PARTICULARLY SACKS AROUND WHICH IS SHRUNK A SHEET

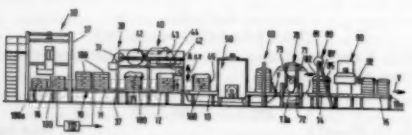
Bernhard Beumer, Beckum, Fed. Rep. of Germany, assignor to Bernhard Beumer Maschinenfabrik KG, Beckum/Westfalen, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,555

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120215

Int. Cl.³ B65B *55/06, 35/50*

U.S. Cl. 53—557 **8 Claims**



1. A plant for producing pallet-less stacks of bundles, particularly sacks, around which is shrunk a sheet, with free spaces formed in the vicinity of the stack base for inserting conveying and lifting mechanisms, such as the arms of the fork of a fork lift truck or the like, using a stacking conveyor belt, by the combination of the following means arranged along the conveyor belt:

(a) a first means for forming individual bundles into layered stacks with a base surface at the top and with free spaces parallel to the stack feed direction on the conveyor disposed on either side of the bundle layer forming the stack base surface, said first means including a bundle row storage means, a horizontally and vertically adjustable packing table to which are supplied the individual bundle rows by means of a transfer mechanism for forming bundle layers on the packing table, and a bundle layer holdback ledge in the horizontal movement area of the packing table for transferring the individual bundle layers from the packing table to the conveyor belt or onto the uppermost bundle layer of a partial stack already formed on the conveyor belt;

(b) a second means for applying a top sheet onto said bundle layer forming the base surface of the stack;

(c) a third means for covering the stack with a dome-shaped sheet of heat shrinkable plastic material, said third means including a welding and cutting means for sealing the top end of a sheet web portion for forming the dome-shaped sheet covering and for cutting the in each case necessary length of a sheet web portion for a stack from a hose-like sheet web, folded in concertina-like manner in the longitudinal side area, provided by a sheet delivery reel located above the stack movement path along said conveyor, wedge plates for opening the sheet web, a gripping device for gripping the open lower edge of the sheet web and for covering the stack with the sheet, said gripping device being movable by means of a drive mechanism from an upper gripping position to a lower spreading or expanding position laterally of the stack, and a lateral edge control device for guiding the sheet web from the reel to the vicinity of the stack to be wrapped;

(d) a fourth means for shrinking the dome-shaped sheet covering drawn over the stack;

(e) a fifth means for pressing the portion of the sheet covering located in the vicinity of said free spaces of the stack onto the wall surfaces bounding the latter, said fifth means comprising pressure rollers movable laterally into the area of the free spaces of the stack;

(f) a sixth means for rotating the stack with the shrunken sheet covering by 180° in the direction of the stack movement path and having supporting devices engaging the stack in the free spaces of the stack;

(g) a seventh means for placing a top sheet of shrinkable plastic material having a larger area than that formed by the upper bundle layer of the rotated stack onto the latter, said seventh means including a sheet delivery reel and a cutting device;

(h) a eighth means for shrinking said top sheet by local heating thereof and having pressing devices for pressing the laterally projecting portion of the top sheet onto the shrunken dome-shaped sheet covering the stack and a following air cooler for the heated top sheet;

(i) supporting means, disposed on the portion of said conveyor following said stack rotating sixth means, said supporting means extending into the free spaces of the stack for engaging and supporting the lower surface of the stack extending laterally from said bundle layer forming the stack base surface; and wherein the end portion of the conveyor belt is constructed as an accumulation belt.

4,434,604

STRAP

Elizabeth A. Bird, Mill House, Mill La., Wychbold, Droitwich, West Midlands, England

Filed Mar. 18, 1982, Ser. No. 359,383

Claims priority, application United Kingdom, Mar. 19, 1981, 8108618

Int. Cl.³ B68C *1/00, 1/14*

U.S. Cl. 54—23 **8 Claims**

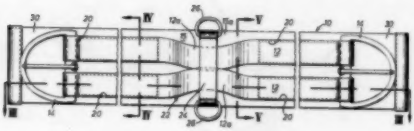
1. A strap, for example, a cinch strap, having:

(a) a first strap portion comprising at least one tensile band or strip;

(b) means for fastening said strap to a support, for example, a saddle, said means being at opposite ends of said strap;

(c) a second strap portion comprising a band or strip arranged in co-extensive longitudinal overlapping superimposed relationship with said first strap portion and attached thereto, said second strap portion being a support portion for the body of an animal such as a horse and being resiliently compressible in a direction at right angles to its length to provide cushioning characteristics for said strap against the body of an animal such as a horse;

(d) at least one closed loop region disposed intermediate the ends of said strap and comprising a length of said first strap portion, a length of said second strap portion, and means securing together said lengths at their opposite extremities to form said at least one loop region and so that



said lengths are non-slidable relative to one another longitudinally of said strap;

(e) said length of said second strap portion being less than said length of said first strap portion when said strap is in a relaxed condition without longitudinal tensile load, the arrangement being effective in the relaxed condition to cause said length of said first strap portion to lie in a slack bight spanned by said second strap portion loop region whereby, in use of the strap under an increasing longitudinal tensile load, said load is transmitted through said length of said second strap portion which stretches and extends longitudinally until the slack of said bight of said first strap portion is taken up, any further increase in said tensil load then being shared between both of said lengths thereby providing an abrupt increase in resistance to stretching of said strap when said slack is taken up.

4,434,605

MOWER-CONDITIONER

Alfred J. Bailey, Coventry, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB81/00069, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/02966, PCT Pub. Date Oct. 29, 1981

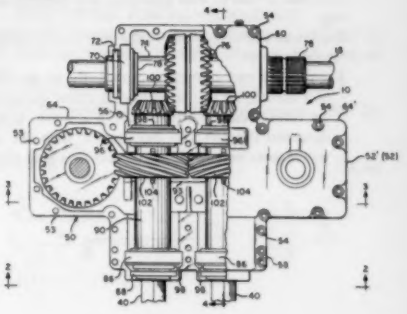
PCT Filed Apr. 15, 1981, Ser. No. 339,458

Claims priority, application United Kingdom, Apr. 22, 1980, 8013131

Int. Cl.³ A01D *47/00*

U.S. Cl. 56—16.4 **10 Claims**

1. A mower conditioner having a conditioning rotor which is supported at its ends in bearing units that are secured to side support walls characterized in that said bearing units (**51**) are secured to said side support walls (**24**) by releasable fastening means including a pair of coaxial fasteners (**56**) defining an axis (**68**) parallel to that of the rotor axis (**23**), about which the bearing units (**51**) and rotor (**22**) can swing downwards until



the rotor (**22**) contacts the ground, thereby facilitating removal and re-attachment of the conditioning rotor (**22**).

4,434,606

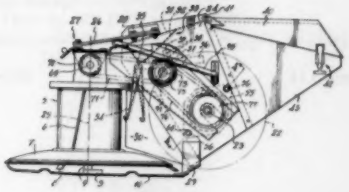
GEAR BOX FOR CORN HARVESTING UNIT

Lawrence G. Rhodes, and John W. Carter, both of Stockton, Mo., assignors to Superior Gear Box Company, Stockton, Mo.

Filed May 4, 1982, Ser. No. 374,705

Int. Cl.³ A01D *47/00*; F16H *37/06*

U.S. Cl. 56—106 **12 Claims**



1. A compact gear box for a corn harvesting unit of the type having a pair of longitudinally extending harvesting rolls and a pair of gathering chain assemblies, the gear box comprising:

(a) a gear case including front and rear end portions and opposed side portions,

(b) a drive shaft having an axis of rotation transversely disposed to the axes of the harvesting rolls, said drive shaft being rotatively mounted in the rear end portion of the gear case and having bevel gear means mounted thereon for rotation therewith,

(c) a first pair of shafts rotatively mounted in spaced parallel relation within the gear case, said first shafts having axes of rotation longitudinally aligned with associated axes of the harvesting rolls, each of said first shafts including:

1. a rear end provided with bevel gear means drivingly engageable with the bevel gear means of the drive shaft,
2. a front end, and
3. an intermediate portion having worm a gear means mounted thereon for rotation therewith,

(d) means connecting the harvesting rolls to the first shafts, and

(e) a second pair of shafts mounted in spaced parallel relation within the gear case, said second shafts having axes of rotation transversely disposed to the axes of rotation of the harvesting rolls, each of said second shafts being mounted in one of said gear case side portion and including:

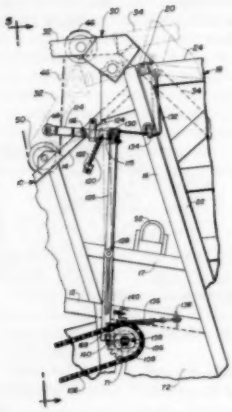
1. a lower end supported by the gear case in thrust bearing relation,
2. an upper end extending outwardly of the gear casing and connected to the gathering chain assembly, and
3. an intermediate portion having a worm wheel means mounted thereon and engageable with the associated worm gear means of one of said first pair of shafts.

4,434,607

OVERFILL PROTECTION APPARATUS FOR ROLL BALING MACHINE

Willis R. Campbell, Ephrata, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 6, 1982, Ser. No. 405,780
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **17 Claims**



1. A roll baling machine comprising:

(a) a frame;

(b) bale forming means movably supported on said frame defining a bale chamber for forming roll bales of crop material;

(c) pickup means movably supported on said frame for picking up crop material and delivering it to said bale chamber;

(d) drive means for driving said pickup means;

(e) a trip lever rotatably supported on said frame;

(f) an actuating lever rotatably supported on said frame;

(g) said trip lever being movable between a first position where said actuating lever is prevented from interrupting the driving of said pickup means and a second position where said actuating lever is moved to interrupt the driving of said pickup means; and

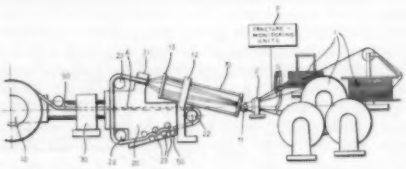
(h) said trip lever moving from said first position to said second position when said bale chamber is filled with crop material to a predetermined level.

4,434,608

METHOD AND AN APPARATUS FOR MANUFACTURING STRANDS FROM WIRES OR ROPES FROM STRANDS

Helmut Hartmann, Cologne, Fed. Rep. of Germany, assignor to Trefilarbed Drahtwerk Köln GmbH, Cologne, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,103
Claims priority, application Luxembourg, Jan. 15, 1981, 83064
Int. Cl.³ D07B *3/10*
U.S. Cl. 57—58.52 **8 Claims**



1. A method of laying up a multiplicity of elongate, flexible elements into a continuous member in a twist formation, comprising the steps of:

(a) feeding said elongate elements from respective supplies thereof at a fixed location to a common assembly point;

(b) passing said elongate elements from said assembly point through respective passages in a cluster array having a center point in an outwardly fanning pattern;

(c) passing said elongate elements from said array to a closing point where said elements are brought together;

(d) rotating said closing point about an axis while swinging said array around said axis without rotating, thereby forming said member, said points lying substantially along a straight line including an acute angle with said axis whereby said array is displaced along a hollow cycloidal path about said axis; and

(e) taking up said member.

4. An apparatus for laying up a multiplicity of elongate flexible elements into an elongated member having a twist configuration, comprising:

(a) a plurality of supply reels disposed at fixed locations and carrying respective elongate elements;

(b) an assembly point formed with a perforated plate traversed by said elements;

(c) a hollow shaft connected at one end to said assembly point and formed at an opposite end with a distributor plate having a cluster array of passages traversed by said elements whereby said elements fan out to said distributor plate from said assembly point, said hollow shaft being connected to said assembly by a hollow universal joint traversed by said elements and enabling said shaft to swing while preventing rotation of said shaft, said array having a center point;

(d) a flyer rotatable about an axis and formed with an eye receiving said elements from said distributor plate, said eye being spaced outwardly from said axis and disposed along a line connecting said center point and said assembly point and including an acute angle with said axis whereby said elements are laid up in said eye to form said member in a twist pattern; and

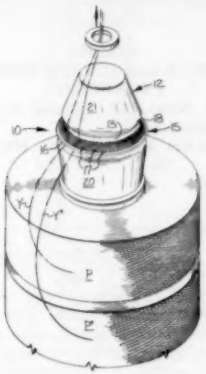
(e) means rotatable with said flyer for taking up said member.

4,434,609

YARN BRAKE AND PROCESS FOR TENSIONING AT LEAST TWO YARNS IN A TEXTILE YARN PROCESSING MACHINE

Dieter Schacht, Kempen, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,807
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124482
Int. Cl.³ D01H 7/86, 13/10; B65H 59/06, 59/36
U.S. Cl. 57—58.86 5 Claims



1. In a textile yarn processing machine including at least two, separate, cross-wound, supply packages of yarn, and means mounting said supply packages in said machine for simultaneous withdrawal of the yarns from said supply packages in a common circumferential direction of movement with respect to said supply packages and in a common linear direction of movement from said supply packages for processing in said machine; the combination therewith of a yarn brake mechanism for applying substantially uniform tension to the at least two yarns moving from said supply packages, said yarn brake mechanism comprising:

a member mounted in said machine and positioned in the linear path of movement of the at least two yarns and defining an outer, frusto-conical shaped, yarn braking surface tapered inwardly in the linear direction of movement of the yarns;

a comb-like, braking, ring member slidably positioned around said braking surface and dimensioned for receiving the at least two moving yarns in braking engagement between said braking surface and said ring member, said ring member having slightly spaced-apart teeth of pliantly elastic, springy material positioned therearound and extending therefrom generally in the linear direction of movement of the yarns, said teeth being inclined with respect to said ring both inwardly such that at least the tips of said teeth contact said braking surface and circumferentially in the circumferential direction of movement of the yarns, so that at least two of said teeth overlap each other along each directrix of said braking surface and frictionally engage each of the at least two yarns regardless of the position of the individual yarns or the position of said ring member on said braking surface; and

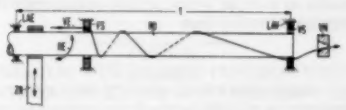
means including an annular shoulder formed on said member at a location normally spaced from the tips of said teeth in the direction of yarn movement for limiting sliding movement of said braking ring member along said braking surface in the linear direction of movement of the yarns, and while permitting limited floating movement of said ring along the braking surface under the influence of the moving yarns and until said tips of said teeth engage said annular shoulder.

4,434,610

PIPE STORE FOR SZ STRANDING

Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,160
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210611
Int. Cl.³ D07B 3/00, 7/00
U.S. Cl. 57—294 14 Claims



1. In stranding apparatus of the type for SZ stranding of stranding elements in which an elongate pipe store is mounted and driven for rotation through a fixed input apertured guide disc which feeds stranding elements onto the pipe store and with a mutually rotating output apertured stranding disc which feeds the stranding elements in common to an aperture of a stranding nipple, the improvement wherein:

said pipe store comprises fiber material

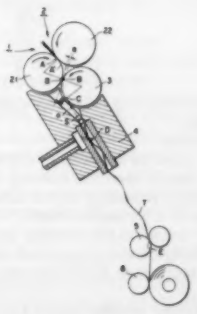
and cured, hard resin bonding the fiber material.

4,434,611

PNEUMATIC TWISTING SPINNING APPARATUS

Junzo Hasegawa, Obu; Susumu Kawabata, Aichi, and Hiroshi Niimi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jan. 20, 1982, Ser. No. 341,113
Claims priority, application Japan, Jan. 31, 1981, 56-13319
Int. Cl.³ D01H 5/28, 5/18
U.S. Cl. 57—328 11 Claims



1. A pneumatic twisting spinning apparatus comprising:

a drafting device having a front roller and back roller, each of said front and back rollers having a peripheral wall for opening fibers and forming bundled fibers having a predetermined thickness;

a deflection means, disposed adjacent to said front roller and spaced from said front roller by a predetermined distance, for varying the direction of fleece travel and supplying the fleece along an outer peripheral wall of said front roller, said deflection means having a contact surface and being positioned and constructed such that fleece which has been supplied along said outer peripheral wall of said front

roller subsequently contacts a predetermined length of said contact surface;

a pneumatic twisting nozzle for injecting air under pressure into a twisting tube to form a swirling air stream having an axial component of force, so that the fleece supplied from said deflection means can be twisted into a yarn by the swirling air stream revolving at a high speed;

a take-up roller for withdrawing the yarn from said pneumatic twisting nozzle; and

a winding roller for winding the yarn as it is withdrawn by said withdrawal roller,

whereby ends of the peripheral fibers are separated from said fleece on said outer peripheral wall of said front roller and said contact surface of said deflection means, said peripheral fibers being twisted by said pneumatic twisting nozzle so as to be wound around central main fibers and forming a bundled yarn.

4,434,612

FALSE TWIST DRAFTING DEVICE FOR CONTINUOUS WORKING OF SLUBBINGS OF TEXTILE MATERIALS

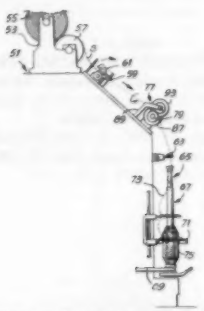
Ida Petracchi, Via Palasaccio 6; Antonietta Assirelli, Via C. Abba 69, both of Prato, Florence; Carlo Pacini, Via Paisiello 4, Calenzano, Florence, and Cesare Pacini, Borgo Valsugana 28, Prato, Florence, all of Italy

Filed May 14, 1982, Ser. No. 378,325

Claims priority, application Italy, May 18, 1981, 9420 A/81; Dec. 9, 1981, 9584 A/81

Int. Cl.³ D01H *5/28, 5/18;* D02G *1/04*

U.S. Cl. 57—331 **10 Claims**



1. A false twist drafting device for slubbings of textile material, comprising:

a frame support;

a first shaft rotatably mounted to said frame support;

at least two spaced apart first rotating members each having a first radially extending frontal surface and mounted for rotating with with said first shaft;

at least two second shafts rotatably mounted to said frame support, being parallel to said shaft and axially offset from said first shaft, each of said second shafts having a free end;

a second rotatable member having a second radially extending frontal surface and mounted for rotation with each of said second shafts at each free end to expose at least a portion of each second frontal surface and so that each second member overhangs each free end;

said first and second frontal surfaces of one of said first and second members and said first and second frontal surfaces of the other of said first and second members facing and partly overlapping each other at a contact area for receiving textile to be drafted therebetween, each of said first and second frontal surfaces having a conical annular shoulder, with said conical annular shoulders of said overlapping first and second frontal surfaces approaching each other near a center of said contact area and extending tangentially to each other at said center of said contact area, each of said frontal surfaces having a toothed crown area surrounding and extending outwardly of each conical annular shoulder respectively for drafting textile in said contact area;

transmission means for transmitting rotation of one of said first and second shafts to the other of said first and second shafts so that said first shaft rotates in a direction opposite to said second shafts; and

biasing means for axially moving one of said first and second members with respect to the other of said first and second members to bias said first and second frontal surfaces together in said contact area.

4,434,613

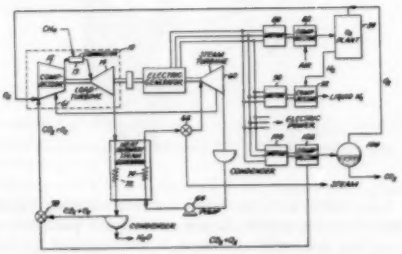
CLOSED CYCLE GAS TURBINE FOR GASEOUS PRODUCTION

Charles R. Stahl, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,571

Int. Cl.³ F02C *6/18*

U.S. Cl. 60—39.07 **6 Claims**



1. An apparatus for producing fluids including at least carbon dioxide comprising:

a gas turbine having a gas compressor and a load turbine driven by combustion of gases introduced into a combustor, said combustor receiving gases at least partially from said compressor;

means for supplying hydrocarbon fuel to said combustor;

means for supplying a stoichiometric excess of oxidant to said combustor to effect complete combustion;

means for feeding back at least some gaseous exhuast including carbon dioxide to said compressor from the output of said load turbine;

means to at least partially divert from said compressor the feedback flow thereto; and

means to remove carbon dioxide from said diverted feedback flow.

4,434,614

COMBUSTION CHAMBER IN A ROCKET PROPULSION SYSTEM WITH MULTIPLE DIVERGENT PORTION

George Gill, 4662 Green Canyon Dr., Las Vegas, Nev. 89103; Alain Souchier, Le Chenet de Blaru, Bonnieres S/Seine, France 78270, and Georges Dorville, Mezieres en Vexin, Tourny, France 27510

Filed Apr. 9, 1982, Ser. No. 366,985

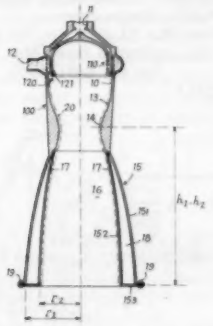
Claims priority, application France, Apr. 13, 1981, 81 07366

Int. Cl.³ F02K *1/08*

U.S. Cl. 60—271 **14 Claims**

1. In a combustion chamber in a rocket propulsion system with multiple divergent portions, comprising a combustion enclosure in which propellants are introduced and a nozzle for ejection of the gases produced in the combustion enclosure, the divergent part of the nozzle and at least one inner divergent portion whose exit section is smaller than that of the outer divergent portion and which is fitted in the outer divergent

portion and connected thereto by connecting means associated with means for selectively destroying said connecting means to allow separation and ejection of the inner divergent portion at a predetermined instant of the functioning of the combustion chamber corresponding to a predetermined altitude of the rocket propulsion system, the inner divergent portion is retained in position inside the outer divergent portion by said



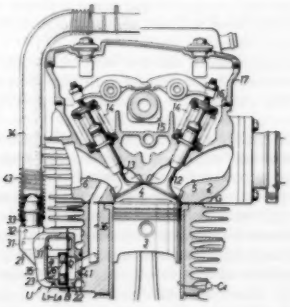
connecting means which themselves are fixed to the lower part of the inner divergent portion, on the one hand, and to the lower part of the outer divergent portion on the other hand, whilst the upper part of the inner divergent portion is fitted laterally against the upper part of the outer divergent portion, at the exit of the nozzle throat, and pressure balancing ports are arranged in the inner divergent portion.

4,434,615

EXHAUST GAS CLEANING DEVICE OF INTERNAL COMBUSTION ENGINES

Yasuo Ikenoya, Kawagoe, and Yoichi Ishida, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,429
Claims priority, application Japan, Jan. 23, 1981, 56-9378
Int. Cl.³ F01N *3/30*
U.S. Cl. 60—293 **10 Claims**



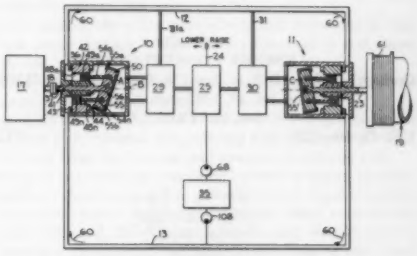
1. An exhaust gas cleaning device for an internal combusion engine, said engine having intake and exhaust ports, a cylinder block, a cylinder head and a valve operating mechanism mounted on an upper portion of said cylinder head, said exhaust port opening at the front surface of said cylinder head and an exhaust pipe connected to the opening of said exhaust port and extending downwardly in front of the engine,
said exhaust gas cleaning device comprising:
a secondary-air supply system connected to said exhaust port for supplying secondary air thereto for purifying the exhaust gas;
reed valve means connected in the secondary-air supply system, said reed valve means being adapted to be opened and closed by the pulsation of exhaust gas generated in said exhaust port during engine operation, wherein said reed valve means is mounted on the front side surface of said cylinder block, below said exhaust port and said valve operating mechanism, said reed valve means having an inlet passage and an outlet passage;
a secondary-air intake pipe connecting said inlet passage to the atmosphere; and
a secondary-air supply passage formed in said cylinder block and in said cylinder head for connecting said outlet passage to said exhaust port.

4,434,616

HYDRAULIC WINCH SPEED CONTROL WITH PRESSURE-RESPONSIVE OVERRIDE

Terry M. Christopher, and Randolph J. Nelson, both of Cedar Rapids, Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 23, 1981, Ser. No. 314,268
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—451 **10 Claims**



1. A system for controlling the speed of a rotatable load and for preventing the load from stalling when an operator tries to move the load at too fast a rate, said system comprising:
a variable displacement hydraulic motor coupled to said load;
a variable displacement hydraulic pump;
means for connecting said pump to said motor;
power means for operating said pump;
a pump control for controlling the displacement of said pump to control the fluid supplied to said motor;
a motor control for adjusting the displacement of said motor to control the speed of said motor; and
an override circuit for sensing the motor operation and for overriding said motor control in controlling the displacement of said motor to prevent said motor from stalling.

4,434,617

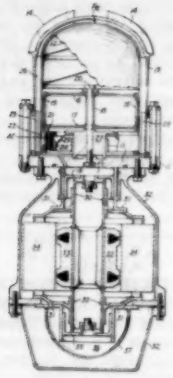
START-UP AND CONTROL METHOD AND APPARATUS FOR RESONANT FREE PISTON STIRLING ENGINE

Michael M. Walsh, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 27, 1982, Ser. No. 402,303
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—520 **10 Claims**

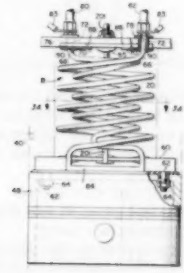
1. A resonant free-piston Stirling engine of the type having a displacer reciprocally movable within an engine housing and at least partially driven by a working gas pressure wave periodically produced within the engine to drive a working member from which work is derived from the engine, the improvement including in combination, displacer linear electrodynamic machine means operatively associated with said displacer, said displacer linear electrodynamic machine means being a general purpose machine capable of selective operation

either as a linear electric motor to partially driven said displacer in conjunction with the periodic working gas pressure



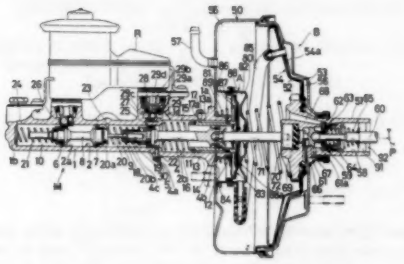
wave or as a linear electric generator providing a load on said displacer.

4,434,618
ENGINE CONSTRUCTION
Corbett L. Dillon, R.R. 4, Box 176, Olive Hill, Ky. 41164
Filed Jul. 19, 1982, Ser. No. 399,663
Int. Cl.³ F03G 7/06
U.S. Cl. 60—528 **6 Claims**



1. An improved engine with at least two cooperating piston-cylinder assemblies wherein each of said assemblies comprises a cylinder formed in an engine block with a cylinder head and a piston in sliding relationship in said cylinder toward and away from said head, a piston rod operatively connected to one side of said piston and to a crankshaft, motion producing means of shape-memory material having a transformation temperature range, such as nickel-titanium or the like, secured to said cylinder head and the side of said piston opposite from said connecting rod, said motion producing means having a heat treated high temperature extended shape memory position and a low temperature low energy compressed position, said motion producing means being of hollow tubular form and having pressure and return hoses connected to said motion producing means for supplying and removing temperature reducing fluid into and from said motion producing means, and electrical heating means connected to said motion producing means, whereby said motion producing means is readily compressed with relatively little force from the extended shape memory position to the compressed position when temperature reducing fluid is supplied to said motion producing means through said pressure hose to redue the temperature of the motion producing means to or below the lower limit of the transformation temperature range and said motion producing means is autmoatically extended with relatively great force from the compressed position to the shape memory position when heated by said heating means to or above the upper limit of the transformation temperature range.

4,434,619
BRAKE MASTER CYLINDER ASSEMBLY
Hideyuki Kobayashi, Toyota, Japan, assignor to Aisen Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 23, 1981, Ser. No. 246,176
Claims priority, application Japan, Mar. 24, 1980, 55-38015
Int. Cl.³ B60T 13/00
U.S. Cl. 60—547.1 **5 Claims**



1. A brake master cylinder assembly responsive to motion of a brake pedal, comprising:

(a) a cylinder body having a stepped axial bore including a large diameter portion at one end and a small diameter portion at the other end;

(b) a tubular piston having an axial bore slidably disposed in said large diameter portion;

(c) a primary piston having axially opposed end portions, one said end portion being slidably disposed in said small diameter portion and the other said end portion being slidably disposed in the bore of said tubular piston for axial movement relative to said tubular piston in response to an axial force without transmitting the axial force to said tubular piston, said primary piston being operatively connected to said brake pedal at the other end portion thereof;

(d) a pressure chamber in said small diameter portion defined by the one end portion of said primary piston, said pressure chamber being in fluid communication with an outlet in said cylinder body;

(e) an annular pressure chamber defined by said primary piston and said tubular piston in restricted fluid communication with said pressure chamber for supplying fluid at low pressure in said pressure chamber;

(f) a vacuum brake booster operatively interconnecting said brake pedal and said primary piston, said brake booster comprising a power piston operatively connected to said primary piston, said power piston separating said booster into first and second chambers normally in fluid communication with each other, said first chamber being positioned between said cylinder body and said power piston and being in fluid communication with a substantial vacuum and valve means operatively connected to said brake pedal for selectively interrupting fluid communication between said chambers and connecting said second chamber to atmospheric pressure;

(g) a vacuum actuator disposed in said brake booster and comprising a diaphragm piston operatively connected to said tubular piston, said diaphragm piston separating said actuator into first and second actuator chambers normally in fluid communication with each other, said first actuator chamber being positioned between said cylinder body and said diaphragm piston and being in fluid communication with said first chamber, and means for selectively inter-

rupting fluid communication between said actuator chambers and connecting said second actuator chamber to atmospheric pressure, said vacuum actuator being responsive to movement of said brake pedal for moving said tubular piston relative to said primary piston toward the other end of said cylinder body to create low pressure in said annular pressure chamber and for preventing said brake pedal from receiving the reaction force on said tubular piston generated by said low pressure;

(h) first return spring means for axially urging said primary piston toward said one end of said cylinder body to normally hold said primary piston in its return position; and

(i) second return spring means independent of said first return spring means for axially urging said tubular piston toward said one end of said cylinder body to normally hold said tubular piston in its return position.

4,434,620

CONDENSATION SYSTEM FOR POWER PLANT

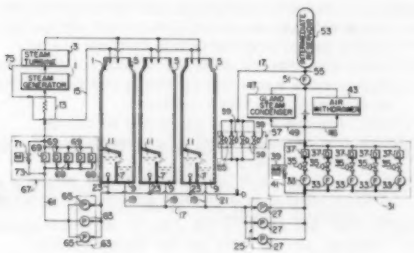
Hitoshi Ishimaru; Yoji Nagai, and Toyohiko Masuda, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,335

Claims priority, application Japan, Jul. 8, 1981, 56-105545

Int. Cl.³ F01K *19/00*

U.S. Cl. 60—657 **12 Claims**



1. A condensation system for use in a power plant including a steam generator and a steam turbine, comprising:

at least one side stream condenser defining therein first and second hot wells, said first hot well receiving therein condensate produced by condensing steam exhausted from said steam turbine;

a condensate feed line having one end thereof connected to said first hot well and the other end communicating with said second hot well;

condensate pump means provided in said condensate feed line for forcibly delivering the condensate through said condensate feed line from said first hot well;

first purification means provided in said condensate feed line for removing impurities from the condensate flowing through said condensate feed line;

a main condensate feed line having one end thereof communicating with said condensate feed line and the other end connected to said steam generator;

main condensate pump means provided in said main condensate feed line for forcibly delivering the condensate through said main condensate feed line; and

second purification means provided in said main condensate feed line downstream of said main condensate pump means for removing impurities from the condensate flowing through said main condensate feed line.

4,434,621

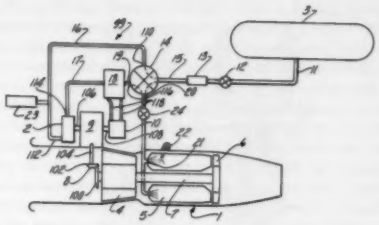
ENGINE FUEL SYSTEM

Dennis E. Barbeau, Lambertville, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 4, 1981, Ser. No. 299,393

Int. Cl.³ F02C *7/232*

U.S. Cl. 60—734 **8 Claims**



1. A fuel system for an engine having a fuel port comprising:

a fuel inlet conduit having one end adapted for connection with a source of fuel,

a fuel outlet conduit having one end adapted for connection with the engine fuel port,

a valve means, the other ends of said fuel inlet conduit and fuel outlet conduit being fluidly connected to said valve means,

a third conduit having a first and second end fluidly connected to said valve means,

fuel pump means connected in series with and at a midpoint of said third conduit for pumping fuel through said third conduit from its first end and towards its second end,

said valve means being actuatable between a bypass position and an operating position, wherein in said bypass position said valve means fluidly connects said other ends of said fuel inlet and fuel outlet conduits and simultaneously sealingly closes said first and second ends of said third conduit, and wherein in said operating position said valve means fluidly connects said fuel inlet conduit with the first end of the third conduit and simultaneously fluidly connects said second end of the third conduit with the fuel outlet conduit.

4,434,622

REGENERATIVE CYCLIC PROCESS FOR REFRIGERATING MACHINES

Otto Winkler, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Jun. 4, 1982, Ser. No. 384,931

Claims priority, application Switzerland, Jun. 5, 1981, 3700/81

Int. Cl.³ F25B *9/00*

U.S. Cl. 62—6 **6 Claims**

1. A regenerative refrigerating machine comprising:

a housing defining a working space;

a displacer movable in said housing for changing the volume of said working space;

displacer drive means connected to said displacer for moving said displacer in said housing;

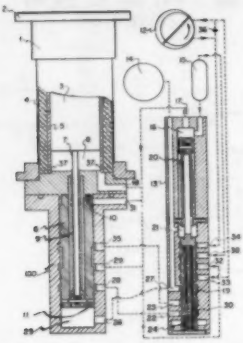
a compressor having a high pressure side and a low pressure side;

valve means connected between said compressor low and high pressure sides and said housing;

an intermediate vessel connected to said valve means for receiving a gaseous coolant at a medium pressure between a maximum and a minimum pressure of a cyclic cooling process for said refrigerating machine;

said valve means with compressor operable during an expansion phase of said process to directly pump gaseous coolant out of said working volume, to compress the gaseous

coolant to a pressure above a pressure thereof in said working volume and supply the coolant to said intermediate vessel;

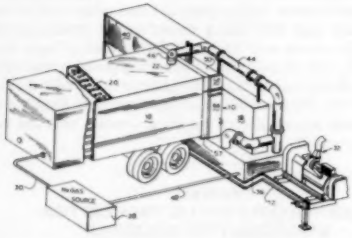


said valve means and compressor comparable during a compression phase of said process to pump coolant out of said intermediate vessel to said working volume.

4,434,623
HYDRO-COOLING AIR LOCK

George E. Weasel, Jr., Nhy-Temp, Inc., Hwy. 65, McClure, Ohio 43534

Filed Nov. 8, 1982, Ser. No. 439,919
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—64 **14 Claims**

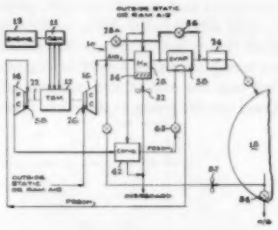


1. The process involving
a. vegetation in a
b. transport container having
(i) an opening in the walls thereof with
(ii) at least one door over the opening,
c. sprinkler means in the container for flushing chilled water over the vegetation therein,
wherein the improved method comprises:
d. moving the container against an alcove,
e. forming an air-tight seal between the alcove and the container,
f. opening the door into the alcove,
g. flushing the vegetation in the container by pumping chilled water into the sprinkler means within the container,
h. draining the water from the container into the alcove,
i. re-chilling the water from the alcove and pumping it again through the sprinkler means, then
j. ceasing the pumping of the water,
k. closing the doors within the alcove, and
l. moving the container away from the alcove.

4,434,624
ENERGY-EFFICIENT ALL-ELECTRIC ECS FOR AIRCRAFT

Michael J. Cronin, Sherman Oaks, and Gordon Seid, Los Angeles, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Mar. 27, 1981, Ser. No. 248,603
Int. Cl.³ F28B *9/00*
U.S. Cl. 62—172 **34 Claims**

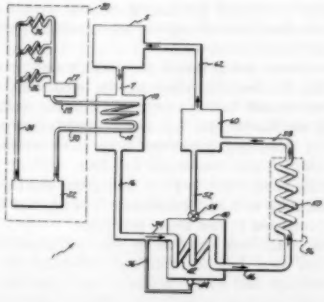


1. An environmental control system for an aircraft having at least one engine, at least one generator driven by said at least one engine, and a cabin, said environmental control system being adapted for providing conditioned air to said cabin, the improvement comprising:
an air circuit for providing said conditioned air to said cabin;
an evaporative heat exchanger located within said air circuit;
a coolant circuit for providing a fluid coolant path through said environmental control system, said coolant circuit coupled to said evaporative heat exchanger;
a coolant compressor located within said coolant circuit;
expansion valve means located within said coolant circuit for evaporating said fluid coolant;
a cabin compressor located within said air circuit;
electric motor means adapted to be powered by said at least one generator; and
means associated with said electric motor whereby said motor is adapted to drive both said coolant compressor and said cabin compressor.

4,434,625
COMPUTER COOLING SYSTEM

Roger W. Cree, Stillwater, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 20, 1983, Ser. No. 488,320
Int. Cl.³ F25B *5/00*
U.S. Cl. 62—199 **6 Claims**



1. A cooling system for a computer, comprising:
a compressor for compressing lower pressure, lower temper-

ature gaseous refrigerant of said cooling system into higher pressure, higher temperature gaseous refrigerant;

a first stage condenser for condensing said higher pressure, higher temperature gaseous refrigerant into lower temperature, partially liquid refrigerant, said first stage condenser including a heat exchange conduit which carries liquid coolant from a building heating system comprised of a boiler, supply conduits from said boiler to a plurality of heat exchangers, return conduits from said heat exchangers to a heating system condenser, and conduits from said heating system condenser to said boiler, said heat exchange conduits of said condenser being supplied liquid coolant from said heating system condenser, said coolant passing through said heat exchange conduits of said first stage condenser before returning to said boiler, said higher pressure, higher temperature gaseous refrigerant of said cooling system giving up heat to said coolant in said heat exchange conduits before leaving said condenser as lower temperature, partially liquid refrigerant;

a second stage condenser for condensing said partially liquid refrigerant to fully condensed liquid refrigerant, comprising a diversion conduit for directing a portion of said partially liquid refrigerant to an expansion valve of said second stage condenser, a heat exchange conduit for carrying the nondiverted portion of said partially liquid refrigerant through said second stage condenser, the diverted portion of said partially liquid refrigerant being flushed into said second stage condenser through said expansion valve to reduce the temperature of said nondiverted portion of said partially liquid refrigerant in said heat exchange conduit so that fully condensed refrigerant leaves said second stage condenser from said heat exchange conduits; and

cooling coils for cooling said computer, said fully condensed refrigerant passing through said cooling coils to draw heat from and cool said computer whereby used refrigerant is discharged from said cooling coils and returned to said compressor.

4,434,626

MAINTENANCE AND PROTECTION DEVICES FOR COOLING PLANTS

Manfred Schmidt, Berlin, Fed. Rep. of Germany, assignor to Erich Schultze KG, Berlin, Fed. Rep. of Germany

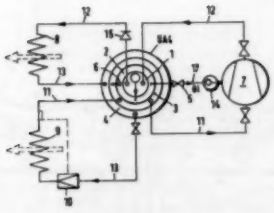
Division of Ser. No. 171,186, Jul. 22, 1980, Pat. No. 4,329,854. This application Apr. 12, 1982, Ser. No. 367,787

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930404

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ F25B *43/02*

U.S. Cl. 62—470 **2 Claims**



1. In a single circuit refrigeration plant in which a gas stream, while flowing in the circuit, is compressed by a compressor which injects oil into the gas stream while compressing the gas stream, circulated from the pressure side of the compressor and through a condensor, then through an evaporator and finally back to the suction side of the compressor,

an apparatus improvement, comprising:

a housing having wall means defining two concentrically located contiguous compartments, each being interposed in said single circuit at a respectively different relative location as follows:

(a) a first compartment being interposed between the pressure side of the compressor and the condenser;

(b) a second compartment being interposed between the first compartment and the suction side of the compressor;

there being further provided in said circuit a degassing valve between the second compartment and the suction side of the compressor, a non-return valve between the first compartment and the condenser, and a fluid collector between the condenser and the suction side of the compressor;

there being further provided a gas pressure-operated means connecting said first compartment with said second compartment for delivering pressurized oil separating from said compressed gas stream in said first compartment to said second compartment with some gas dissolved therein; and conduit means for delivering degassified oil collecting in the second compartment back to the compressor;

the first compartment being axially centrally located and directly ringed by the second compartment,

so that, in operation:

as the compressed gas stream enters the first compartment the pressurized oil therein separates therefrom and the resultingly de-oiled compressed gas stream flows to and through the condenser, to and through the evaporator, is combined with the gas that is degassed from the oil in the second compartment, and the resulting gas stream is returned to the suction side of the compressor, meanwhile, the oil degassed and collected in the second compartment is cooled at least in part by indirect heat transfer with the atmosphere exteriorly of the apparatus and is returned to the compressor,

so that the two compartments serve the following principal functions:

oil is separated from compressed gas in the first compartment and

separated oil is degassed in the second compartment.

4,434,627

STITCH FORMING DEVICE FOR KNITTING MACHINES

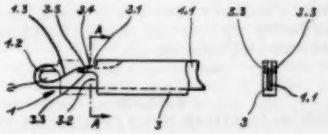
Bruno Pfrommer, Emmetten, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

Filed Apr. 19, 1982, Ser. No. 369,645

Claims priority, application Switzerland, May 14, 1981, 3135/81

Int. Cl.³ D04B *35/04*

U.S. Cl. 66—120 **13 Claims**



1. A stitch forming device for knitting machines or the like, comprising:

a hook element having a body member and a hook arranged at one end of the body member and defining a hook opening;

said body member having a bevelled portion forming a hollow throat with said hook opening;

a closure element cooperating with said hook element;

said closure element being constructed over at least a portion of its length by a closed hollow body member;

said closed hollow body member slidingly guiding said hook element;

said closed hollow body member possessing a nose-shaped

portion forming an inner surface and an end surface at the end thereof confronting said hook opening;

said end surface of said nose-shaped portion being bevelled in the same direction as said bevelled portion of said body member of said hook element; and

said closure element and said hook element being displaceable relative to each other to define a closed position and an opened position with respect to said hook in which said nose-shaped portion of said closed hollow body member bears upon said hook and upon said body member, respectively.

4,434,628

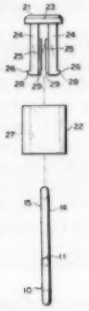
KNITTING NEEDLE ASSEMBLY

Takashi Tsuzuki, Kodaira, Japan, assignor to Silver Seiko Ltd., Kodaira, Japan

Filed Apr. 13, 1982, Ser. No. 367,935

Int. Cl.³ D04B *35/04*

U.S. Cl. 66—123 **9 Claims**



1. A knitting needle assembly comprising:

a knitting needle made of a metal material and having a laterally extending butt formed thereon, said butt defining a groove which extends on a side along the length thereof from a base end near to a free end thereof; and

an attachment made of a plastic material and comprising a substantially cylindrical outer member and an inner member, said outer member defining an inner bore in which said inner member is retained, wherein said inner and outer members define a recess for receiving the free end of said butt therein to allow said members to be mounted on the free end of said butt, said inner member having formed on an inside surface thereof, which partially defines said recess, a projection adapted to fit in said groove of said butt thereby to prevent said members from being inadvertently removed from said butt.

4,434,629

WASHING MACHINE WITH ELECTROCHEMICAL CELL

Giuseppe Bianchi, Milan, and Roberto Sburlino, Udine, both of Italy, assignors to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Sep. 30, 1982, Ser. No. 431,077

Claims priority, application Italy, Dec. 14, 1981, 45738 A/81

Int. Cl.³ D06F *35/00*

U.S. Cl. 68—13 A **9 Claims**

1. A laundry washing machine comprising:

a washing tub;

water supply means;

decalcifying means for receiving water from said water supply means and for discharging softened water;

a metering tank at an upper position in the machine for receiving softened water from said decalcifying means;

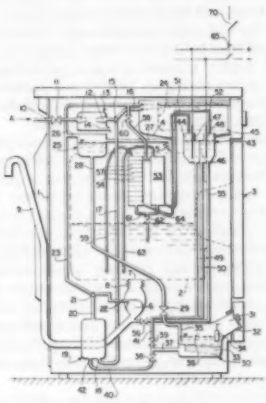
brine tank means at a lower position in the machine for receiving softened water from said metering tank and for generating brine;

an electrochemical cell for generating chlorine gas;

first means for selectively supplying brine from said brine tank means to said electrochemical cell;

second means for selectively supplying brine from said brine tank means to said decalcifying means during a stage of regeneration thereof;

a discharge extending from a lower portion of said washing tub;



third means connecting said electrochemical cell to said discharge;

absorption means connected to said decalcifying means to receive therefrom softened water and connected to said electrochemical cell to receive therefrom said chlorine gas, for absorbing said chlorine gas in said softened water; and

means for selectively supplying said softened water and absorbed chlorine gas into said washing tub, thereby to perform a bleaching operation.

4,434,630

WASHER-DEHYDRATOR

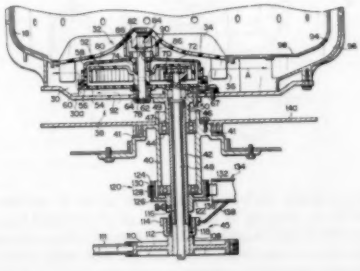
Yoshio Ikeda, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 1, 1982, Ser. No. 353,382

Claims priority, application Japan, Mar. 15, 1981, 56-31744

Int. Cl.³ D06F *17/06, 23/04*

U.S. Cl. 68—18 F **7 Claims**



1. A washer-dehydrator which comprises:

a water tank;

a rotary tub which is rotatably held in the water tank and

which has a depression eccentrically positioned therein and at least one communication hole for communicating the water tank therewith;

a pulsator rotatably fitted into the depression;

a pulsator shaft concentrically fitted to the pulsator;

a washing shaft concentrically fitted to the rotary tub;

a rotation moment-transmitting mechanism provided between the washing shaft and pulsator shaft to transmit the rotation moment of the washing shaft to the pulsator shaft;

a sealed case for covering the rotation moment-transmitting mechanism in a watertight state which is set below the pulsator in the depression at a point raised above the base of the depression at a prescribed distance, said base of the depression having a penetrated hole therein to let said depression communicate with a space defined between the rotary tub and water tank;

a water-circulation path which is provided in the rotary tub, one end of which is opened to the depression, and the other end of which is positioned above the highest level of water received in the rotary tub;

a filter mechanism which includes an inlet connected to said other end of the water-circulation path and an outlet opened to the inside of the rotary tub, and which filters water running therethrough;

a plurality of pumping blades fitted to the underside of the pulsator around the sealed case, which, when the pulsator is rotated, draws the water held in the rotary tub into the depression through the communication hole and penetrated hole, and sends forth the water held in the depression to the filter mechanism through the water-circulation path; and

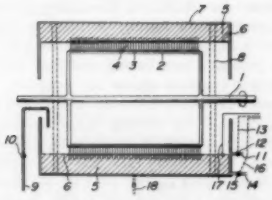
guide means provided between the sealed case and the base plate of the depression to conduct the water sucked through the penetrating hole to the outer peripheral wall of the sealed case.

4,434,631

APPARATUS FOR TREATING PILE ARTICLES

Masao Matsui, Takatsuki; Kazuo Okamoto, and Takao Osagawa, both of Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers Ltd., Osaka, both of, Japan

Filed Jan. 25, 1982, Ser. No. 342,557
Claims priority, application Japan, Jan. 26, 1981, 56-10364
Int. Cl.³ D06B *1/10*
U.S. Cl. 68—171 **6 Claims**



1. An apparatus for treating a pile article or articles, comprising:

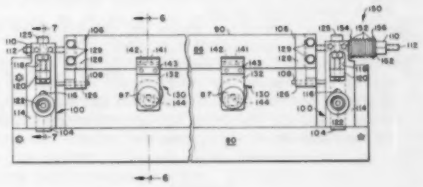
an elongated, rotatable, hollow container, an elongated, rotatable body substantially coaxially disposed inside said container, said container and said body being mounted for rotation at substantially the same speed about a common, longitudinally extending, axis of rotation, said container having a longitudinally extending inner wall surface and said body having longitudinally extending outer wall surface means opposed to and spaced radially inwardly from said inner wall surface of said container, said inner wall surface and said outer wall surface means defining a treatment zone therebetween, the pile article or articles being fixed on said outer wall surface means of said body so that rotation of said body applies centrifugal force on the piles so that they extend radially outwardly in said treatment zone, said container retaining at least one treating liquid in said treatment zone so that rotation of said container applies centrifugal force on said treating liquid to form same into at least one layer on said inner wall surface in said treatment zone and with at least one interface of said treating liquid contacting the piles on the pile article or articles; feeding means for feeding treating liquid into said container and discharging means for discharging treating liquid from said container.

4,434,632

APPARATUS FOR THE APPLICATION OF LIQUIDS TO MOVING MATERIALS

John K. McCollough, Jr., and John H. O'Neill, Jr., both of Spartanburg, assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 25, 1981, Ser. No. 324,789
Int. Cl.³ D06B *1/02*
U.S. Cl. 68—205 R **5 Claims**



1. In an apparatus for applying liquids to moving material having means for conveying the material in a pre-determined path of travel, liquid applicator means hving a row of outlets positioned above the path of travel of the material for continuously discharging a row of generally parallel streams of liquid downwardly toward the path of travel of the material, fluid discharge means positioned on one side of said row of outlets so that the discharge axes of said fluid discharge means intersect the discharge axes of said outlets, a liquid collection chamber mounted on the other side of said row of outlets, a thin liquid deflector blade extending across said path of travel, mounting means for mounting said liquid deflector blade in the path of travel of the liquid deflected by said fluid discharge means to said liquid collection chamber, said mounting means including tensioning means associated with the ends of said blade and including a threaded shaft extending beyond said blade end to apply outward tension to the ends of said deflector blade, said tensioning means further including tension measuring means for determining the tension applied by said tensioning means along the axis of said blade, said measuring means comprising a cylindrical array of at least two spring washers under compression, arranged in linear fashion along said shaft, said shaft being aligned generally parallel to the axis of said blade, and means for supplying fluid to said fluid discharge means to direct liquid from said liquid application means into said liquid collection chamber.

4,434,633

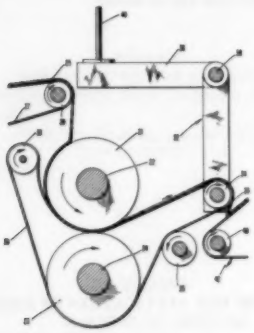
HIGH EXPRESSION SQUEEZE ROLL LIQUOR EXTRACTION OF NONWOVEN BATTS

Allen R. Winch, Westfield, N.J., and William A. Rearick, Simpsonville, S.C., assignors to Cotton Incorporated, New York, N.Y.

Division of Ser. No. 259,567, May 1, 1981. This application Sep. 30, 1982, Ser. No. 428,802

Int. Cl.³ D06B *15/02*

U.S. Cl. 68—267 **20 Claims**



20. A squeeze roll arrangement for extracting liquor from a nonwoven textile fiber batt comprising:

high expression, squeeze roll means for providing a nip to express liquor from a batt including an upper squeeze roll and a lower squeeze roll;

first primary conveyor means for conveying the batt to the upper squeeze roll means;

second primary converyor means for conveying the batt away from the squeeze roll means; and

auxiliary conveyor means defining a nip with said upper squeeze roll means for progressively conveying and squeezing said batt through said nip of said auxiliary conveyor means and said upper squeeze roll means and then through said nip of said squeeze roll means.

4,434,634

LOCK

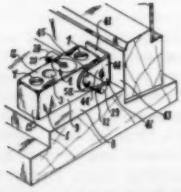
Gerald F. Dunphy, and Lance E. Best, both of Melbourne, Australia, assignors to Ogden Industries Pty. Limited, Victoria, Australia

Filed Dec. 1, 1981, Ser. No. 327,254

Claims priority, application Australia, Dec. 2, 1980, PE6720

Int. Cl.³ E05B *65/00*; E05C *1/04*

U.S. Cl. 70—89 **10 Claims**



1. A lock including a six sided body adapted to be secured to a support, two passages extending completely through said body, one of said passages extending between an opposite two of said sides and the other said passage extending between another two said sides, a locking bar slidably receivable in either of said passages to be slidable therein for longitudinal movement relative to said body between an operative position and an inoperative position, said bar being insertable into either end of one of said passages and having a locking end portion which protrudes from an end of a selected said passage at least in said operative position, a recess in said locking bar intermediate the ends thereof, a primary locking member movably mounted on said body for movement between a locking position and an unlocking position, said primary locking member protruding into said recess and thereby holding said bar against said longitudinal movement when said bar is located in said one passage and is in said operative position and said primary locking member is in said locking position, and an intermediate locking member movably mounted on said body and being responsive to movement of said primary locking member into said locking position to protrude into said recess when said locking bar is in said other passage and is in said operative position.

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MANUALLY AND ELECTRICALLY COMMANDED AUTOMATIC HOOKLOCK

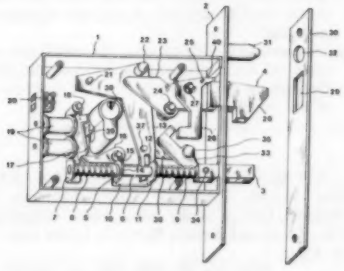
Augusto Borgato, Rovigo, Italy, assignor to F.A.M.A. di Sandra Borgato & C., S.n.c., Italy

Filed Mar. 10, 1981, Ser. No. 242,507

Claims priority, application Italy, Mar. 11, 1980, 64503 A/80; May 7, 1980, 64504 A/80

Int. Cl.³ E05B *47/00*

U.S. Cl. 70—279 **4 Claims**



1. An electrically and manually operable lock mechanism for a sliding gate comprising:

a casing adapted for attachment to a sliding gate and including a bearing flange having an opening therethrough adapted to be aligned with a similar opening in a lock plate on a gate post as a gate having said lock mechanism attached thereto is closed against the gatepost;

a hook member pivotably mounted within said casing and extending through the bearing flange opening, with an inclined surface adapted to act upon an edge of the lock plate opening to pivotably raise said hook member as the sliding gate is closing against the gate post and to lower said hook member when the gate is fully closed, with said hook member then being hooked on the lock plate;

a first lever pivotably mounted within said casing and including a portion engaging said hook member to pivot said first lever in a first direction as said hook member is raised;

means for pivotably biasing said first lever in a second direction opposite the first direction to retain said first lever engaging portion in engagement with said hook member;

a rod member slidably mounted within said casing;

first moving means responsive to the closing of said lock mechanism against the lock plate as the sliding gate is closing against the gate post for moving said slidably mounted rod member to a first position;

latching means responsive to said slidably mounted rod assuming its first position for latching said first lever in a

latched position with said engaging portion acting against said hook member to prevent raising of said hook member;

a blocking plate member movably mounted within said casing for movement between a first position and a second position;

means for biasing said blocking plate member to its first position;

electrical actuation means for moving said blocking plate member to its second position;

key operated manual actuation means for moving said blocking plate member to its second position;

second moving means responsive to movement of said blocking plate member to its second position for moving said latching means to release said first lever from the latched position and for pivotably raising said hook member to permit withdrawal of said hook member from the locking plate opening and sliding opening of the sliding gate; and

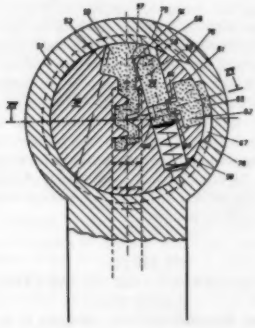
third moving means responsive to movement of said lock mechanism away from the lock plate as the sliding gate is opening for moving said slidably mounted rod member to a second position and for releasing said hook member to permit said hook member to be freely raised and lowered.

4,434,636

LOCK HAVING A CYLINDER CORE AND A HOUSING

Kurt Prunbauer, Herzogenburg, Austria, assignor to EVVA-Werk Spezialerzeugung von Zylinder-und Sicherheitsschlössern GmbH & Co. KG, Vienna, Austria

Filed Nov. 21, 1980, Ser. No. 209,286
Claims priority, application Austria, Nov. 28, 1979, 7553/79
Int. Cl.³ E05B *15/14, 27/06*
U.S. Cl. 70—358 **4 Claims**



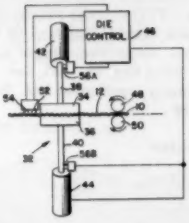
1. A cylinder lock comprising a core provided with a keyway defining an elongated center plane and being adapted for receiving and guiding a key, said key having a key bit formed with a rear bit portion and a front bit portion, at least one side of respective rear and front bit portions being provided with control projections and recesses and the at least one side of the front bit portion being provided with guiding grooves and ribs, a cylinder housing for said core, first tumbler means arranged in said housing and said core and being controlled by the control projections and recesses on the front bit portion, auxiliary tumbler means arranged in said core at locations which are spaced apart from said first tumbler means and cooperating with corresponding recesses in said housing, feeler elements arranged for reciprocating movement in said core between said auxiliary tumbler means and said keyway, said feeler elements forming an oblique angle with the center plane of said keyway and being controllable by the control projections and recesses on said rear bit portion to control the movement of said auxiliary tumbler means, said auxiliary tumbler means including an axial groove formed in the periphery of said core, a continuous bar movable in axial direction in said groove, said continuous bar being formed with inner extensions engageable with said feeler elements, and with opposite outer extensions projecting towards said housing, said housing including an axial recess for accommodating said outer extension and being also formed with a series of radial grooves for guiding said outer extensions in one axial position of said continuous bar while the walls of said axial groove in said housing act as stop surfaces for said outer extensions in another position of said bar.

4,434,637

METHOD AND APPARATUS FOR FLATTENING CORRUGATED HEAT EXCHANGER PLATE

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 165,831, filed as a PCT US80/00082, Jan. 28, 1980, published as WO81/02121, Aug. 6, 1981, § 102(e) dated Jan. 28, 1980. Pat. No. 4,346,582
This application Mar. 3, 1982, Ser. No. 354,212
Int. Cl.³ B21D *53/04*
U.S. Cl. 72—17 **11 Claims**



1. An apparatus (32) for crushing the ridges (12) in a corrugated electrically conductive sheet (10) comprising die set means (34, 36, 38, 40, 42, 44) for receiving said sheet (10) and moving into and away from engagement therewith, control means (46) for initiating the movement of said die set means (34, 36, 38, 40, 42, 44), and sensing means (52,54) for sensing the position of said sheet (10) relative to said die set means (34, 36, 38, 40, 42, 44) and operating to cause said control means (46) to initiate movement of said die set means (34, 36, 38, 40, 42, 44) into engagement with said sheet (10) when the sheet (10) reaches predetermined positions, said sensing means (52, 54) including switch means (52, 54) in contact with said sheet (10), said switch means (52,54) including a bridging member (104) of sufficient size to span the distance between two adjacent ridges (12) in said corrugated electrically conductive sheet (10), said bridging member (104) including two sections of electrically conductive material (108, 110) and insulating means (112) electrically separating said sections (108,110), and electrical connector means (114,116) extending from each of said electrically conductive sections (108,110) to said control means.

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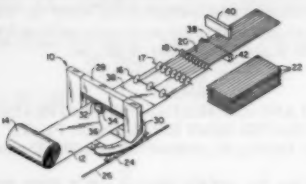
METHOD AND APPARATUS FOR SEVERING CORRUGATED METAL PRODUCTS

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001

Division of Ser. No. 167,942, Jul. 14, 1980, Pat. No. 4,346,576. This application Jul. 30, 1982, Ser. No. 403,909
Int. Cl.³ B21F *11/00*
U.S. Cl. 72—130 **14 Claims**

1. A method for producing from flat metal sheet a corrugated product having a predetermined length comprising the steps of: feeding an elongated flat metal sheet in a longitudinal direction of the sheet towards a corrugator; forming a score line in the flat metal sheet across a width thereof, the score line extending from one face towards another, opposite face of the sheet; thereafter passing the sheet through the corrugator to transform the sheet into a corrugated plate having longitudinally extending, parallel side-by-side corrugations; and severing the corrugated project from the corrugated plate by apply-

ing a force to the plate in a direction transverse to a surface of the plate, the force being applied in the vicinity of the score



line; whereby the product snaps off a remainder of the corrugated plate along the score line.

4,434,639

ARRANGEMENT FOR PRODUCING DRAWN FORMATIONS ON WORKPIECES, PARTICULARLY IN A CUTTING AND PRESSING MACHINE

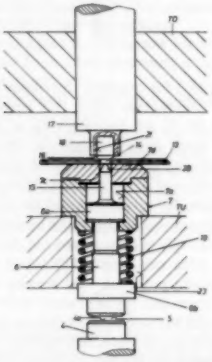
Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,296

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042158

Int. Cl.³ B11D *45/00*

U.S. Cl. 72—344 **9 Claims**



1. A drawing arrangement, particularly for use in a cutting and pressing machine having a numerically controlled coordinate table, for producing drawn formations on substantially sheet-shaped workpieces having respective bottom surfaces that travel along a predetermined plane during relative movement between the workpieces and the arrangement, comprising a support; a first tool mounted on said support below said predetermined plane and having an upper supporting surface for supporting the workpieces, permanently arranged in the predetermined plane, and a recess which opens onto said supporting surface; a second tool mounted on said support above the predetermined plane for movement in opposite directions toward and away from said first tool upto area contact with the respective workpiece supported on said supporting surface, and including a female drawing die aligned in said opposite directions with said recess of said first tool; and a drawing punch mounted on said first tool within said recess for movement between an extended position in which it extends beyond said supporting surface toward said female drawing die to deform a portion of the workpiece into the latter and a retracted position in which it is fully retracted into said recess of said first tool and is at most flush with said supporting surface of said first tool in order not to interfere with the movement of the workpiece along the predetermined plane.

4,434,640

PROCESS FOR THE PRODUCTION OF A BEARING BUSHING WITHOUT MACHINING

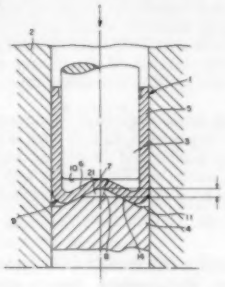
Lothar Walter, Schweinfurt; Manfred Brandenstein, Eussenheim, and Armin Olschewski, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,657

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034951

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—348 **7 Claims**



1. A method for making a bearing bushing for the support of the trunnion in universal joints comprising a cylindrical sleeve section, a bottom section at one axial end of the cylindrical sleeve section, the peripheral edge joining the sleeve section and bottom section being of small cross-sectional radius, consisting of the steps of shaping a blank to form the sleeve section and bottom section which uniformly projects axially from the juncture of the sleeve section and bottom section to a central dome-shaped tip and thereafter flattening from the inside at least in the area of the central dome-shaped tip of the bottom section while supporting the bottom section, said dome-shaped tip being spaced from said bottom support prior to said flattening step and correspondingly forging the outside surfaces of the bottom section in the area of the peripheral edge between the surface of the sleeve section and the outside surface of the bottom section.

4,434,641

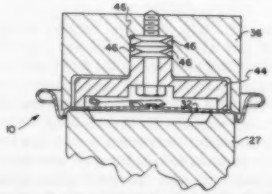
BUCKLE RESISTANCE FOR METAL CONTAINER CLOSURES

Tuan A. Nguyen, Broomfield, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Mar. 11, 1982, Ser. No. 357,032

Int. Cl.³ B26D *22/00*

U.S. Cl. 72—354 **29 Claims**



1. A method of further forming a metal closure having an initial configuration defined by a circular panel, a sidewall, and an intermediate section joining the sidewall to the panel, comprising restraining the panel against lateral movement, and while said panel is so restrained flowing metal radially in-

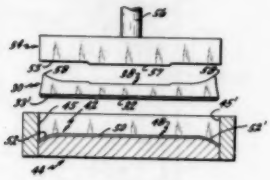
wardly about the periphery of said panel in an amount sufficient to cause compression doming.

4,434,642

REVERSE FORGING OR REPLACEMENT GROUSER BARS

Robert Rasmussen, Rancho Palos Verdes, Calif., assignor to Industrial Parts Depot, Torrance, Calif.

Filed Jun. 1, 1981, Ser. No. 268,906
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—356 **7 Claims**



1. A method of making a replacement grouser bar having a straight upper edge and a curved lower edge with end portions wider than the center comprising the steps of:

forming a blank having a concavely curved upper edge and a straight lower edge with the ends wider than the central portion;

beveling said straight lower edge;

supporting said blank in a die defining a die cavity having a bottom, said bottom having a straight horizontal central portion and downwardly curving side portions, said bottom further being V-shaped in width to preserve said bevel on said lower edge;

applying downward force to said upper concavely curved edge along a horizontal plane parallel to said straight lower edge whereby said curved upper edge is substantially straightened and said beveled straight lower edge is curved to conform to the downward curvature of said die bottom.

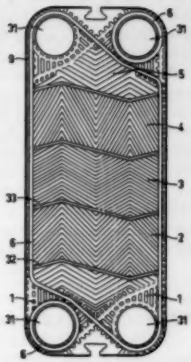
4,434,643

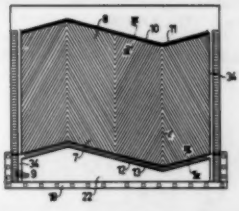
METHOD AND A DEVICE FOR EMBOSSING HEAT EXCHANGER PLATES

Christer Almqvist, Täby, and Lars Lindahl, Handen, both of Sweden, assignors to ReHeat AB, Taby, Sweden

Continuation of Ser. No. 90,495, Nov. 1, 1979, abandoned. This application Dec. 31, 1981, Ser. No. 336,315
Claims priority, application Sweden, Nov. 8, 1978, 7811539
Int. Cl.³ B21D *53/02*
U.S. Cl. 72—379 **3 Claims**

1. A method of producing a heat exchanger plate of the kind having opposite end portions each having apertures therethrough for passage of heat exchanger fluids, the plate also having at least one intermediate portion between the end portions, the intermediate portion and each end portion having a gasket-receiving groove along each edge extending longitudinally of the plate, said method comprising: pressing the whole of each portion simultaneously between parts of a pressing tool and pressing each portion sequentially with respect to other portions, the step of pressing the intermediate portion including simultaneously pressing (a) a non-linear aligning groove extending generally traversely of the plate at one end of said intermediate portion to provide for linear and transverse alignment of the plate during a subsequent pressing operation, (b) a plurality of parallel non-linear corrugations over the remainder of the longitudinal dimension of said intermediate portion with said non-linear corrugations having a different pattern than said non-linear aligning groove and (c) a first gasket-receiving groove extending longitudinally along each edge of said intermediate portion; and thereafter moving the plate blank longitudinally of itself relative to the pressing tool, adjusting the position of the plate blank relative to the parts of the pressing tool by fitting said non-linear aligning groove in the blank to a complementary contour of the pressing tool thereby aligning the plate blank linearly and transversely relative to the pressing





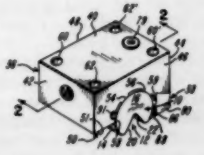
tool; and pressing another portion of the heat exchanger plate with the pressing tool thereby providing a second gasket-receiving groove extending longitudinally along each edge of said intermediate portion connecting with said first gasket-receiving groove.

4,434,644

ROTARY BENDING AND FORMING DEVICES

Robert J. Gargrave, Kettering; John K. Thompson, West Carrollton, and James F. Comstock, Kettering, all of Ohio, assignors to READY Tools, Inc., Dayton, Ohio

Filed Jan. 13, 1982, Ser. No. 339,133
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—387 **9 Claims**



1. A bending and forming device comprising an operating head and a holder for said head wherein said operating head is a generally cylindrical body including a longitudinally extending groove in its outer peripheral surface, said head mounting for rotation on and relative to said holder and presenting the groove therein to the materials to be worked in its bending and forming function, said holder including means defining a sad-

dle for seating said head, said saddle comprising a body having a base, a longitudinally extended substantially hemi-cylindrical groove in a surface thereof remote from its base, a wall surface bounding said groove which incorporates two longitudinally extending bearing portions bounding a strip-like, relatively recessed, portion of said wall surface therebetween and affording a load accommodating seat for said cylindrical body, means defining a retention device mounted on said saddle, in releasable connection therewith and to one side of said groove therein, constructed and arranged to have only a limited surface portion thereof overlie and bear on a portion of said operating head to hold said head to and for a balanced rocking or rotative movement on said seat, said wall surface bounding said groove including therein a longitudinally extending recess partially nesting a cord-like segment of material which is impregnated with lubricant the projected portion of which bears on said cylindrical body in the course of its rocking or rotative movement on and with reference to said seat.

4,434,645

APPARATUS FOR THE RADIAL SHAPING OF TUBULAR ARTICLES

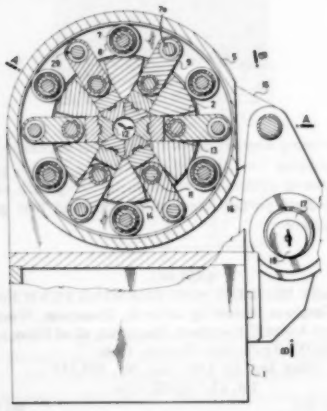
Josef Svercl, Olomouc; Jan Novak, Trebcin, and Zdenek Kalab, Urcice, all of Czechoslovakia, assignors to SIGMANKoncern, Olomouc, Czechoslovakia

Filed Jul. 29, 1981, Ser. No. 288,167

Claims priority, application Czechoslovakia, Aug. 1, 1980, 5372-80; Dec. 2, 1980, 8350-80

Int. Cl.³ B21D *41/00*

U.S. Cl. 72—402 **14 Claims**



1. Appparatus for the radial shaping of rotors, spindles, shafts and the like comprising a frame having at least two guiding segments situated between a left side wall and a right side wall, said guiding segments being provided with an outer rolling surface, a freely rotatable supporting ring encompassing said guiding segments, at least two rollers rotatably supported on eccentric pins fixed on the supporting ring to engage respective ones of said segments, rods interposed between said rollers, sliding shoes bearing forming jaws connected to the inner end of said rods, the outer end of said rods being pivotally connected on supporting pins fixed to the supporting ring so that the sliding shoes with the associated forming jaws are adapted to perform a radial movement between said guiding segments on movement of said supporting ring, the supporting ring being provided on its external circumference with at least one eyelet for a connection with a connecting rod, the other end of which is supported by an eccentric sleeve, which in turn is supported by an eccentric pin connected to a driving shaft.

4,434,646

C-FRAME PRESS

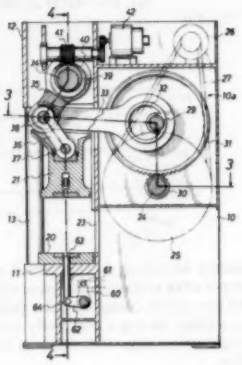
Nobuyoshi Maeda; Hideo Itakura, and Takashi Yagi, all of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Sagamihara, Japan

Filed Jun. 21, 1982, Ser. No. 390,625

Claims priority, application Japan, Dec. 17, 1981, 56-202535

Int. Cl.³ B21J *9/18*

U.S. Cl. 72—451 **1 Claim**



1. A C-frame press comprising:

a C-shaped frame having a crown part and a bed part defining an opening therebetween, a slide reciprocal between said crown part and said bed part, a main shaft having a flywheel thereon and positioned laterally of said slide within said frame, eccentric discs rotatably mounted within said frame and driven from said main shaft, connecting rods extending substantially horizontally from said eccentric discs towards the upper portion of said slide and reciprocated by said eccentric discs, and a toggle mechanism mounted between said slide and said crown part and having a central shaft portion to which said connecting rods are connected, said frame having a machine chamber within said frame adjacent said toggle mechanism and in which said main shaft, eccentric discs and connecting rods are located, said space within said frame adjacent the bed part being clear for receiving part of the workpiece being acted on by said press; and

spacers positioned in said opening in said C-shaped frame and being sufficiently long for urging said crown part and said bed part apart in the vertical direction a distance sufficient to cause said frame to exert on said spacers a load which is at least a substantial part of the normal maximum press load exerted by said press on a workpiece.

4,434,647

DYNAMIC SPOT CALIBRATION FOR AUTOMATIC PARTICLE COUNTERS

William T. Whitcomb, Glendale, and John V. Butler, Newhall, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Jul. 27, 1981, Ser. No. 287,238

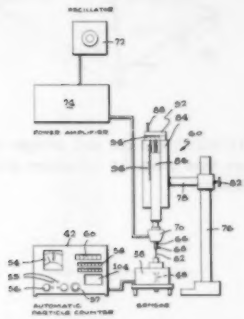
Int. Cl.³ G01N *15/02*

U.S. Cl. 73—1 R **28 Claims**

1. A dynamic calibration system for calibrating an automatic particle counter having a sensor unit including a sensor window defining a fluid passage, said sensor unit including means to sense the size of particles contained in a fluid passing through said window and being adapted to generate signals representative thereof, comprising:

at least one probe having a portion adapted to be inserted into and out of said sensor window fluid passage, said at least one probe constructed of transparent material;

means associated with said probe portion for simulating particles of a preselected size, said simulating means comprising an opaque spot located along said probe portion;
means for gripping said probe;
means connected to said gripping means for reciprocally driving said probe portion within said sensor fluid passage;



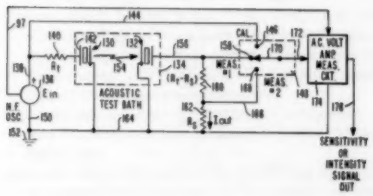
means associated with said driving means for providing power to said driving means; and
means connected to said driving means for precisely positioning said at least one probe portion relative to said sensor window fluid passage.

4,434,648

ELECTROACOUSTIC TRANSDUCER CALIBRATION METHOD AND APPARATUS

Cornelis J. Drost, and G. Jan Milanowski, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 238,319, Feb. 26, 1981, Pat. No. 4,391,124. This application Feb. 25, 1983, Ser. No. 469,861
Int. Cl.³ H04B *11/00*; H04R *29/00*
U.S. Cl. 73—1 DV **11 Claims**



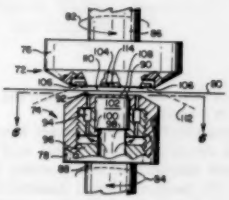
1. A calibration method for a set of three terminated ultrasonic transducers, comprising:
selecting three different pairs of transducers from said set of three, a first pair including a first and a second transducer, a second pair including said first and a third transducer, and a third pair including said second and said third transducers, said second transducer being reciprocal, said first transducer being suitable as a transmitter, said third transducer being suitable as a receiver;
selecting for each of said first, second and third transducers corresponding terminating impedances;
mounting in a predetermined spaced relationship said first pair of transducers to be calibrated;
continuously supplying from a drive signal source a driving signal to said first transducer to cause emission of ultrasonic waves, said driving signal being supplied through the corresponding terminating impedance of the transmit transducer;
causing said second transducer to receive said emitted ultrasonic waves and to produce a transducer output signal through the corresponding terminating impedance of the receive transducer;
measuring said output signal;
mounting in said spaced relationship said second pair of transducers to be calibrated;
supplying said driving signal to said first transducer through its corresponding terminating impedance;
measuring through the corresponding terminating impedance of said third transducer the output signal produced thereby;
mounting in said spaced relationship said third pair of transducers to be calibrated;
supplying said driving signal to said second transducer through its corresponding terminating impedance;
measuring through the corresponding terminating impedance of said third transducer the output signal produced thereby;
measuring the ideal source value of said transducer driving signal source; and
deriving from said measures of transducer driving signal and transducer output signals transducer performance calibration values for at least one of said three transducers.

4,434,649

GAUGE HAVING A SURFACE FOLLOWER WITH PERIPHERAL VENT

Paul Williams, Columbus, Ohio, assignor to AccuRay Corporation, Columbus, Ohio

Filed Apr. 20, 1981, Ser. No. 255,424
Int. Cl.³ G01B *13/06, 13/04*
U.S. Cl. 73—37.7 **20 Claims**



1. Apparatus to be utilized in performing a measurement of a traveling sheet or the like, comprising
a surface follower body adapted to be constrained during the measurement for movement along a surface follower path intersecting the path of the sheet and urged by a force toward one surface of the sheet,
the body having a gas confining wall, the wall having at least an edge portion adapted to be located next to the sheet surface, the edge portion having thereat uniformly distributed pressurized gas supply means with an outer periphery for pressurizing a gas bearing region that is contiguous to the sheet surface and bounded at the sheet surface substantially by the orthographic projection of the periphery on the sheet suface,
the pressurization producing sufficient pressure against the sheet and the wall to levitate the body against the urging force,
the gas supply means having gas retaining wall means with substantially only knife edge thickness next to the periphery and the sheet surface so as to minimize the area of the sheet surface over which high velocity gas flows in escaping from the gas supply means and the gas bearing region,
the body being so shaped that the flow of gas from the gas supply means is substantially unconfined in the region of the sheet surface outside the gas retaining wall means in order to terminate the gas bearing region substantially at the periphery and so that the pressurization is effective without producing substantial amounts of high velocity gas flow over a substantial area of the surface of the sheet

within the gas bearing region, whereby the body is maintained at a distance from the sheet surface that is substantially constant and relatively unaffected by variations in the roughness of the surface.

4,434,650

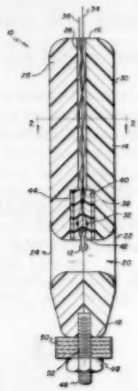
HYDROCARBON SENSOR FLOAT

Ralph A. Perry, Indianapolis, and Raymond J. Andrejasich, Carmel, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 5, 1982, Ser. No. 374,999

Int. Cl.³ G01N *25/18*

U.S. Cl. 73—61.1 R **6 Claims**



1. A sensor float for use in detecting the presence of foreign substances in a liquid comprising:

(a) an elongated floatation member having top and bottom ends, a cavity extending across said elongated member near said bottom end and opening to sides thereof to permit the passage of liquid therethrough, and a centrally disposed elongated passageway extending from said top end to said cavity, said passageway including an enlarged section exposed to said cavity,

(b) a sensor carried in said cavity including insulation means electrically insulating same from said liquid, electrical conductors extending through said passageway, connecting means interconnecting said sensor to said electrical conductors within said enlarged portion, and electrically insulative material carried within said enlarged portion and sealing said connecting means from the environment, and

(c) means for attaching a variable amount of weight to said bottom end of said floatation member.

4,434,651

HARDNESS TEST INDENTERS

Jill E. G. Wood, Hampton, England, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

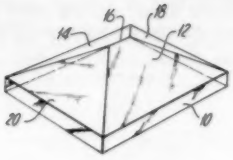
Filed Apr. 28, 1982, Ser. No. 372,608

Claims priority, application United Kingdom, May 6, 1981, 8113740

Int. Cl.³ G01N *3/40*

U.S. Cl. 73—85 **5 Claims**

5. A hardness test indenter having a rectangular base and four operative plane faces, a first pair of said faces meeting each other in a straight ridge; and a second pair of said faces making substantially equal angles with said straight ridge and so disposed in relation to one another and to said ridge that the first pair of faces have edges substantially symmetrically disposed in relation to said straight ridge; the included angle between said first pair of faces and between said second pair of



faces being 111°±0.1°; and the said straight ridge having a length not more than about 0.5 millimeter and not less than about 0.05 millimeter.

4,434,652

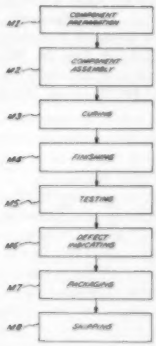
AUTOMATED TIRE MEASUREMENT TECHNIQUES

William C. Christie, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 18, 1982, Ser. No. 339,876

Int. Cl.³ B60C *19/10*

U.S. Cl. 73—146 **14 Claims**



9. In a tire manufacturing process including assembling and curing components of the tire and testing the cured tire by detecting tire data from at least a first sensor means and a second sensor means and analyzing the data by at least a first testing algorithm and a second testing algorithm, an improved method for enabling an operator to select combinations of said sensor means and said testing algorithms in order to analyze the tire based on the selected combination, said method comprising the steps of:

generating signals representative of at least one combination of sensor means and a testing algorithm, each said combination comprising at least one of said first and second sensor means and at least one of said first and second testing algorithms;

storing data obtained from the represented sensor means;

analyzing the data according to the represented testing algorithm; and

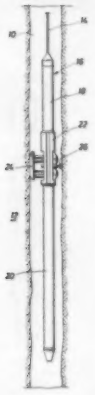
indicating the condition of the tire in response to the analysis of the data.

4,434,653

APPARATUS FOR TESTING EARTH FORMATIONS

Marshall N. Montgomery, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 15, 1982, Ser. No. 398,477
Int. Cl.³ E21B *49/10*
U.S. Cl. 73—151 **16 Claims**



1. Fluid sampling apparatus for obtaining samples of connate fluids from subsurface earth formations traversed by a borehole comprising:

a body member adapted for suspension in a borehole;

a fluid sampling probe cooperatively arranged on and extensible from said body member;

a sample collection means cooperatively arranged on said body member for receiving and retaining a sample of connate fluids;

a fluid passage coupled between said fluid sampling probe and said sample collection means; and

control means located in said fluid passage intermediate said fluid sampling probe and said sample collection means for maintaining the pressure within at least a portion of said fluid passage at minimum level, said level proportionally related to formation pressure, and

wherein said pressure control means comprises:

means for receiving and retaining a sample of said connate fluids; and

pressure responsive means for restricting said fluid passage in proportional response to the pressure of said connate fluids sample retained in said receiving and retaining means.

4,434,654

BOREHOLE ORIENTATION DETECTION SYSTEM EMPLOYING POLARIZED RADIATION

Rand H. Hulsing, II, Redmond; Rex B. Peters, Woodinville, and Kurt E. Steinke, Bellevue, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

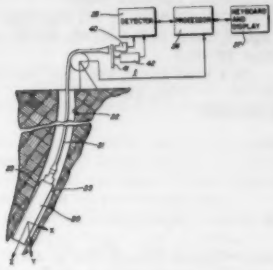
Filed Aug. 9, 1982, Ser. No. 406,431
Int. Cl.³ E21B *47/022*
U.S. Cl. 73—151 **11 Claims**

5. A borehole survey probe comprising:

a housing to traverse the borehole, the housing having a longitudinal axis and being randomly rotatable about said longitudinal axis as the housing traverses the borehole;

an inclinometer in said housing; and

a source of polarized electromagnetic radiation fixed to said housing generating a polarized signal having an axis of polarization orthogonal to the longitudinal axis of the housing, the axis polarization of the signal providing a



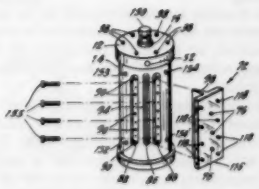
measure of the orientation of the housing as a reference for said inclinometer.

4,434,655

BLACK POWDER FLAMESPREAD TESTER

Martin Summerfield, Princeton; Neale A. Messina, Pennington, and Larry S. Ingram, Cranbury, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 8, 1982, Ser. No. 355,816
Int. Cl.³ G01L *5/14*
U.S. Cl. 73—167 **21 Claims**



1. A black powder flamespread tester, said tester comprising:

sample holding means for holding a sample of black powder to be tested;

ignition means for igniting a sample contained in said sample holder means, said ignition means including;

an electrically actuated pyrotechnic squib;

an ignition head having a first bore formed therein, said squib being received in said first bore, a transition chamber defined in said ignition head, said squib emitting hot gases into said transition chamber upon actuation, and a void volume operatively disposed in said ignition head, said gases from said squib passing from said transition chamber via said void volume into said sample holding means to ignite a sample contained in said sample holding means, passage of said gases through said void volume serving to smooth the flow of said gases;

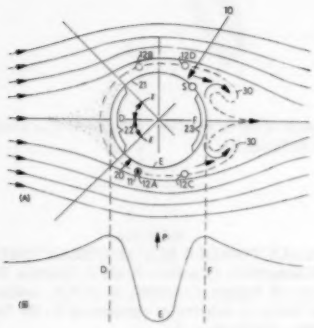
said ignition means further including an orifice plate disposed between said transition chamber and said void volume, said orifice plate having a plurality of orifices formed therein for metering said gases from said transition chamber to said void volume; and

said tester further comprising optical monitoring means for measuring the rate at which a flame front propagates through a sample contained in said sample holding means when the sample is ignited by said ignition means.

4,434,656
MASS AIR FLOW SENSOR

Chester J. Blechinger, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00434, § 371 Date Apr. 8, 1982, § 102(e) Date Apr. 8, 1982, PCT Pub. No. WO83/03669, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 8, 1982, Ser. No. 380,841
Int. Cl.³ G01F 1/68
U.S. Cl. 73—204 3 Claims



1. A heated element mass air flow meter for measuring mass air flow including:

an elongated element means positioned in the air flow having a temperature responsive resistance for conducting an electric current, an electrical parameter of said element means being indicative of the mass of air flowing past said element means;

an elongated bluff body means positioned generally parallel to and spaced from said element means, said bluff body means providing sufficient resistance to air flow so as to create an area of stagnation upstream of said bluff body means for separating air born dirt from the air stream said bluff body means having a relatively large cylindrical cross section area in comparison to the cross section area of said elongated element means;

said element means being positioned downstream of said area of stagnation so as to be in a relatively dirt free area in comparison to the remainder of the stream and said element means being positioned adjacent said bluff body means at a distance substantially less than the longest cross section dimension of said bluff body means; and

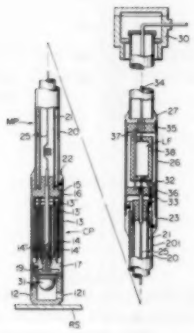
said element means being positioned downstream of an angular segment on the upstream side of said bluff body means and centered about the centerline of said bluff body means, the angular segment extending about 40 degrees to each side of said centerline.

4,434,657
LIQUID QUANTITY MEASURING APPARATUS

Hiroshi Matsumura, Kamakura; Yasuto Ohta, Yokohama; Tetsuo Nozaki, Zushi; Makoto Shimizu, Chigasaki, and Shigeru Sugizaki, Hiratsuka, all of Japan, assignors to Tokyo Tatsuno Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,509
Claims priority, application Japan, Sep. 25, 1981, 56-150565
Int. Cl.³ G01F 23/26
U.S. Cl. 73—304 C 13 Claims

1. An apparatus for measuring the quantity of liquid in at least one tank, which comprises means for detecting a liquid level in the tank and having positive and negative electrodes arranged to allow a flow-in and out of the liquid therebetween for generating a capacitive value, capacitive means arranged below said liquid level detecting means and dipped always in the liquid to measure a dielectric constant of the liquid, a capacitive reference means that is not responsive to the dielectric constant of the liquid, a LC oscillator means converting each capacitive value measured by said liquid level detecting means, liquid dielectric constant measuring means and reference means into a frequency signal, said reference means compensating a capacitive variation of said LC oscillator means due to ambient temperature change and aging thereof, said LC oscillator means being connected to each of said liquid level detecting means, liquid dielectric constant measuring means and reference means through a switching means, and a control box with an indicator means to calculate the quantity of liquid in the tank based on the frequency information from said LC oscillator means and indicate the same on the indicator means.



4,434,658
ULTRASONIC WAVE TOMOGRAPHIC IMAGING SYSTEM

Junʲi Miyazaki, Yokohama; Hirohide Miwa, Kawasaki, and Takaki Shimura, Machida, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

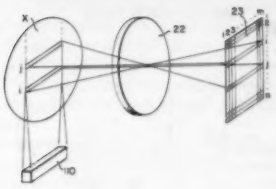
PCT No. PCT/JP80/00164, § 371 Date Mar. 25, 1981, § 102(e) Date Mar. 11, 1981, PCT Pub. No. WO81/00198, PCT Pub. Date Feb. 5, 1981
PCT Filed Jul. 21, 1980, Ser. No. 253,936
Claims priority, application Japan, Jul. 25, 1979, 54-94532
Int. Cl.³ G01N 29/04
U.S. Cl. 73—618 10 Claims

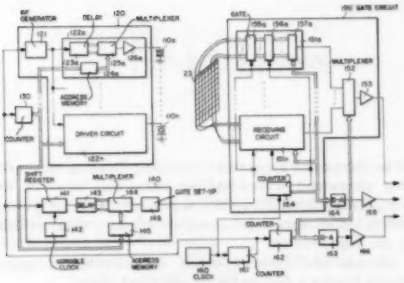
1. An ultrasonic wave tomographic imaging system wherein an acoustic image of a desired tomographic plane in an object is focused on an ultrasonic wave receiving means by an ultrasonic wave lens, said system comprising

generating means for generating focused ultrasonic waves from along a direction that is contained in a plane in space that includes said tomographic plane in said object, and for sequentially scanning said tomographic plane in said object with said focused ultrasonic waves, said direction being oriented essentially transversely to the axis of said lens, and

a gate means for allowing said ultrasonic wave receiving

means to selectively receive the ultrasonic waves of said acoustic image that are focused by said lens, in correspon-





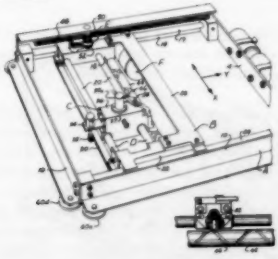
dence with said scanning of said tomograhic plane in said object by said generating means.

4,434,659

TWO-DIMENSIONAL SCANNER APPARATUS

George W. Kurtz, and Ben F. Bankston, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,474
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—620 6 Claims



1. A two-dimensional scanner apparatus for scanning a surface in two-dimensions consisting of an X-direction and a Y-direction, said apparatus comprising:

a frame;

a carriage means slidably carried by said frame for movement in said Y-direction;

scanner means carried by said carriage means adapted for carrying a detector probe for detecting a condition on said surface;

support means supporting said scanner means on said carriage means for movement of said scanner means in said X-direction;

drive means for moving said scanner means across said surface in said X-direction;

mechanical indexing means for indexing and incrementally moving said carriage means in said Y-direction in a predetermined increment in response to a complete movement of said scanner means in said X-direction;

said drive means including a shaft rotatably carried by said carriage means having a closed-loop helix groove formed therein;

follower means engaging within said groove causing said scanner means to travel along said shaft as said shaft rotates and reverses said direction of travel when said follower means reaches the end of said helix;

a drive motor operatively connected for rotating said shaft; and

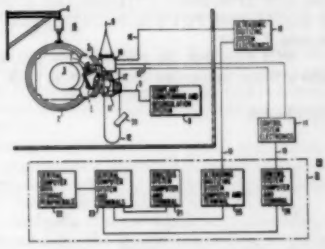
an actuating means carried by said scanner means which mechanically engages said mechanical indexing means and actuates said mechanical indexing means upon said scanner means traveling said complete movement in said X-direction for indexing said indexing means and thereby effecting said predetermined increment in said Y-direction.

4,434,660

ULTRASONIC INSPECTION AND DEPLOYMENT APPARATUS

Jennifer E. Michaels; Thomas E. Michaels, both of Ithaca, N.Y., and Stephen J. Mech, Jr., Pasco, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 19, 1981, Ser. No. 245,304
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—622 4 Claims



1. An ultrasonic deployment apparatus for performing a task upon a specimen which apparatus comprises:

(A) a scanning head having an ultrasonic profiling element and task performing means for performing a task on a specimen,

(B) mechanical support means, for support, positioning and aligning said scanning head, and

(C) computer means for the control of said mechanical support means, said computer means adapted to repeatably locate specific locations on said specimen using a reference system established by said computer means by observation by said profiling element of surface reference marks on a surface of said specimen.

2. An ultrasonic deployment apparatus for the inspection of specimens which comprises:

(A) couplant supply means;

(B) a scanning head having fluid communication with said couplant supply means, a profiling ultrasonic element for mapping the surface of the specimen, an acoustical velocity measuring ultrasonic element for measuring the velocity of sound in the couplant, at least one specimen inspection element for inspection of the specimen, and having a

bellows for forming a couplant filled volume above a surface of the specimen thereby providing an acoustical communication path between the specimen and said scanning head thereby accommodating passage of ultrasonic waves therebetween;

(C) mechanical support means for supporting, aligning and positioning said scanning head in proximity to the specimen; and

(D) control means for said mechanical support means for controllably aligning and positioning said scanning head, which control means comprises a computer system which is programmed to control a specimen inspection traveling scan of the scanning head and moreover to automatically control the position and alignment of the scanning head in response to data obtained by previous and concurrent profiling scans to achieve and maintain desirable position and alignment of said scanning head with respect to said specimen and to use specimen surface features to identify a computer coordinate system and to use said coordinate system to identify and interpret inspection data, said computer moreover programmed to continuously interpret data received from specimen inspection scans and profiling scans using concurrently monitored couplant acoustical velocity measurements.

4,434,661

ULTRASONIC DIAGNOSTIC SYSTEM

Hirohide Miwa, Kawasaki, and Takaki Shimura, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

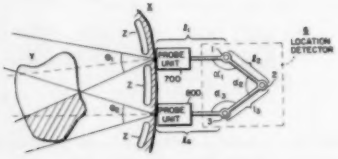
PCT No. PCT/JP80/00015, § 371 Date Oct. 3, 1980, § 102(e) Date Sep. 22, 1980, PCT Pub. No. WO80/01537, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 30, 1980, Ser. No. 209,403

Claims priority, application Japan, Feb. 3, 1979, 54-11587

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—625 **20 Claims**



1. An ultrasonic diagnostic system for obtaining an acoustic image of a measured object comprising:

(a) a plurality of probe units being separated mutually, each probe unit being selectively and separately positionable in any direction and having an electric-acoustic transducer for both transmitting said ultrasonic waves and receiving said acoustic echo waves;

(b) a transmitting circuit for causing said probe units to transmit ultrasonic waves having different characteristics almost simultaneously; and

(c) a receiving circuit containing filters for isolating and extracting signals received from said transducers, said signals having properties respectively corresponding to acoustic echo waves resulting from said transmitted ultrasonic waves; whereby said system obtains the acoustic image of the measured object corresponding to a plurality of scanning lines formed by scanning of each of said probe units.

4,434,662

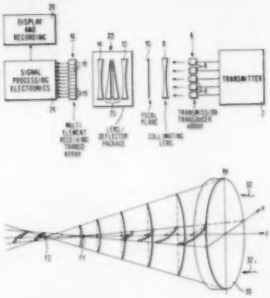
ULTRASONIC IMAGE GENERATING APPARATUS

Philip S. Green, Atherton, Calif., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 16, 1981, Ser. No. 274,282

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—641 **8 Claims**



1. In an ultrasound apparatus comprising focusing means for focusing ultrasound waves and an ultrasound detector for receiving said focused ultrasound waves, said detector having a plurality of elongated piezoelectric electric detector elements, the improvement

(a) wherein said focusing means are astigmatic focusing means having a first and a second focal plane,

(b) wherein the longitudinal axes of said elongated detector elements are curved, and

(c) wherein said ultrasound detector is positioned in one of said focal planes.

4,434,663

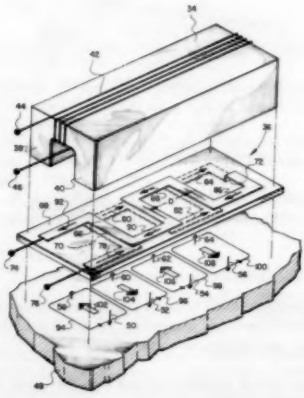
ELECTROMAGNETIC ACOUSTIC TRANSDUCER

William E. Peterson, Thousand Oaks, Calif., and Robert B. Thompson, Ames, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 11, 1982, Ser. No. 338,776

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—643 **14 Claims**



1. An electromagnetic acoustic transducer for use with an electrically conductive object, comprising:

a source of magnetic flux for establishing a static magnetic field in the object and

a meandor coil for inducing eddy currents in the object when an alternating current is applied to the coil, said coil including:

a first serpentine element positioned within said magnetic field in a first plane perpendicular to said field and

a second serpentine element positioned within said magnetic field adjacent to said first element and in a second plane parallel to said first plane,

said elements being connected in series and so oriented that the current direction in said first element is opposite to the current direction in said second element at any instant,

said source and said coil being so oriented that the vector product of said field and said eddy currents produces an instantaneous force field in the object which is periodically alternately oriented.

4,434,664

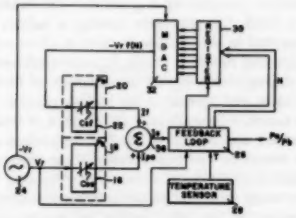
PRESSURE RATIO MEASUREMENT SYSTEM

Frank J. Antonazzi, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 6, 1981, Ser. No. 280,578

Int. Cl.³ G01L 9/12

U.S. Cl. 73—701 **8 Claims**



1. A pressure ratio measuring system comprising:

means for generating first and second alternating reference signals having a predetermined phase relationship therebetween;

a first pressure sensitive impedance, responsive to a first pressure and driven by said first reference signal, for generating a first signal proportional to the change in the first pressure;

a second pressure sensitive impedance, responsive to a second pressure and driven by an alternating feedback signal for generating a second signal proportional to the change in the second pressure;

means, electrically connected to said first and second impedances, for generating an error signal as the difference between said first and second signals; and

means for converting said error signal into a digital number including means for integrating said error signal and generating a digital output number therefrom representative of the ratio of said first and second pressures, digital-to-analog converter means for converting said digital number to an analog signal, and means for multiplying said analog signal by said second reference signal to generate said feedback signal, wherein said feedback signal is fed to said second impedance means to generate said second signal and null said error signal.

4,434,665

INTEGRATED CAPACITIVE TRANSDUCER

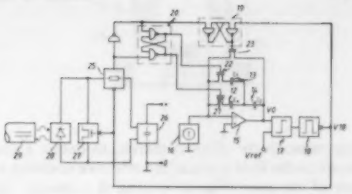
Morgan Adolfsson; Sture Göransson, and Bertil Hök, all of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

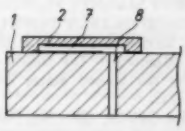
Filed Jan. 27, 1982, Ser. No. 343,105

Claims priority, application Sweden, Jan. 29, 1981, 8100638

Int. Cl.³ G01L 9/12

U.S. Cl. 73—724 **19 Claims**





1. A transducer for indicating the value of a physical quantity to be measured, comprising:

a transducer capacitor having two spaced electrically conducting plates movable relative to one another in response to a mechanical signal representative of the physical quantity to be measured and for generating an electrical signal in response thereto;

capacitive means for trimming said transducer capacitor;

means for actuating and de-actuating said transducer capacitor to be respectively responsive and non-responsive to said mechanical signal in accordance with pre-designated time intervals;

means for integrating an electrical signal in accordance with the capacitance of said transducer capacitor and providing an output signal when the integrated signal exceeds a reference value; and

means for receiving control signals for controlling said means for actuating and for transmitting said output signal

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4,434,666

ELECTROMAGNETIC FLOWMETERS AND METHODS FOR MEASURING FLOW

John Hemp, Cranfield, England, and Yousif A. H. Al-Khazraji, Baghdad, Iraq, assignors to National Research Development Corporation, London, England

Filed Apr. 4, 1980, Ser. No. 137,463

Claims priority, application United Kingdom, Apr. 5, 1979, 7911895

Int. Cl.³ G01F 1/58

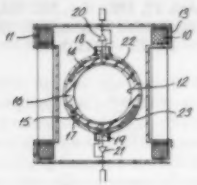
U.S. Cl. 73—861.12 **18 Claims**

17. A magnetic flowmeter for measuring the flow rate of a fluid conducted through a pipe having a longitudinal axis Z, the fluid intercepting a magnetic field whose lines of flux are essentially parallel to a transverse axis X, which is normal both to axis Z and a diametric axis Y, said flowmeter further comprising:

A. a pair of electrode assemblies mounted on the pipe on opposite sides of the X axis in the region of the magnetic field; and

B. a converter whose input terminals are connected to the

electrode assemblies to produce a signal which is proportional to flow rate and is substantially immune to the influence of a non-axisymmetric flow profile, said electrode assemblies being out of contact with the fluid and



being capacitively coupled thereto to detect a potential present on the fluid surface, the effective coupling capacitance of the assemblies decreasing in a manner substantially proportional to the cosine of an angle defined with respect to the Y axis.

4,434,667

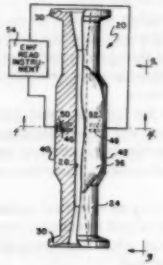
PERMANENT MAGNET FLOWMETER HAVING IMPROVED OUTPUT TERMINAL MEANS

Charles August, Darien, and Harry J. Myers, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 314,917

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.12 **6 Claims**



1. A magnetic flowmeter for measuring flow of a high temperature, high pressure potentially hazardous electrically conductive medium therethrough, comprising:

an elongated body of nonmagnetic material having a longitudinal passageway extending therethrough, said body defining a wall surrounding said passageway for containing a longitudinal flow of conductive medium therein, said wall having a first thickness extending in a first direction perpendicular to the direction of flow of the medium, said wall further having a second substantially greater thickness extending in a second direction perpendicular to both the direction of flow of the medium and said first direction;

magnetic means for passing a magnetic field through said passageway in said first direction; and

elongated terminal means extending in said second direction and integrally formed with said wall of said body, said terminal means formed by trepanning said wall in said second direction to form an inwardly extending cylindrical channel having a bottom, the bottom of said channel spaced from said passageway by a distance approximately equal to said first thickness whereby an electromotive force, generated in said flowing medium and proportional to the rate of flow of said medium through said flowmeter, is transmitted through said terminal means.

4,434,668

DETECTOR FOR USE IN MEASUREMENT OF FLOW SPEED OR FLOW RATE OF A FLUID

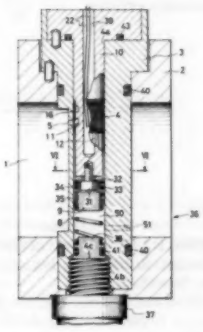
Kazuichi Shinoda, and Masayoshi Katayama, both of Yokohama, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 284,113, Jul. 16, 1981. This application Apr. 29, 1983, Ser. No. 487,719

Claims priority, application Japan, Jul. 18, 1980, 55-101442[U]

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **18 Claims**



1. A detector comprising a generator for shedding vortex streets in a fluid, the generator having a hollow portion, a member inserted in the hollow portion in close contact with the generator and having a recess at a circumferential surface thereof, a through-hole for the introduction of fluid provided in the generator and opened to the hollow portion at the position of the recess, a through-hole for the exit of fluid provided in the generator and opened to the hollow portion at the position of the recess on the downstream of the through-hole for the introduction of fluid, an element for detecting the vortex, the element being provided on the member and disposed in the recess between the through-hole for the introduction of fluid and the through-hole for the exit of fluid, and a filter disposed between the through-hole for the introduction of fluid and the recess.

4,434,669

APPARATUS FOR TRANSMITTING AND RECEIVING SOUND

Victor C. Roberts, London, England, and Antonio J. Sainz, Caracas, Venezuela, assignors to National Research Development Corporation, London, England

Filed Oct. 8, 1981, Ser. No. 309,810

Claims priority, application United Kingdom, Oct. 8, 1980, 8032438

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.25 **12 Claims**

1. Apparatus for transmitting and receiving ultrasound, comprising:

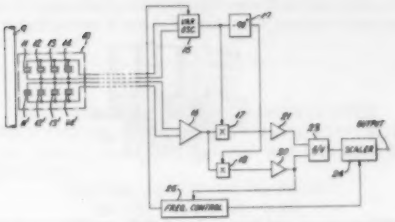
electrical signal generating means for providing output signals at predetermined selectable frequencies;

probe means coupled to the generating means for transmitting ultrasound at any said selectable frequency, and for receiving ultrasound signals at a frequency relatively close to the transmitted frequency; and

frequency controlling means for automatically selecting at least one of said output signals including:

means for comparing the powers of doppler-shifted ultra-

sound signals received by said probe means at said predetermined frequencies, and



means for selecting the one of said output signals which results in most doppler-shifted ultrasound signal power being received.

4,434,670

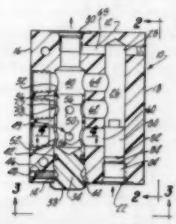
FLUID FLOW METER

Borje O. Rosaen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104

Filed Sep. 4, 1981, Ser. No. 299,394

Int. Cl.³ G01F *1/22*

U.S. Cl. 73—861.54 **14 Claims**



1. A fluid flow meter comprising:

a housing having a fluid inlet and a fluid outlet,

an elongated inlet chamber formed in said housing, said inlet chamber open at one end to said fluid inlet,

an outlet chamber formed in said housing, said outlet chamber open to said fluid outlet,

at least two cross passageways formed in said housing for fluidly connecting said inlet chamber to said outlet chamber, said cross passageways intersecting said inlet chamber at longitudinally spaced positions,

means contained within the inlet chamber for establishing direct fluid communication between only one cross passageways and said inlet chamber when the fluid flow rate into said housing inlet is within a first flow rate range and for establishing direct fluid communication between both of said cross passageways and said inlet chamber when the fluid flow rate into said housing inlet is within a second flow rate range,

means for indicating the flow rate range exteriorly of said housing,

means for varying said flow rate ranges, and

wherein said varying means comprises means for variably restricting said cross passageways.

4,434,671

TENSION SENSOR

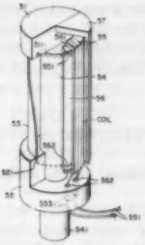
Ichiro Yamashita, Yawata, and Yukihiko Ise, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 18, 1981, Ser. No. 293,982

Claims priority, application Japan, Aug. 18, 1980, 55-113899

Int. Cl.³ G01L *5/10*

U.S. Cl. 73—862.48 **4 Claims**



1. A tension sensor for measuring the tension of a tape-like or string-like object and having a magnetic core composed of a resilient and magnetostrictive amorphous alloy sheet forming a magnetic circuit and having an exciting coil wound around said magnetic core, wherein:

said magnetic core is tubular shaped and supported by supporting means at both end portions thereof such that at least a part of said magnetic core is fixed to said support means; and

said exciting coil is arranged such that magnetic flux generated therefrom is passed circumferentially through said magnetic core and a part of a peripheral surface of said magnetic core is exposed so that said tape-like or string-like object is in contact therewith.

4,434,672

SAMPLING DEVICE

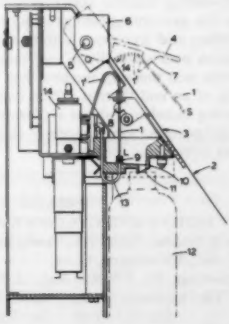
Vivien R. Williamson, 3 Colchester Rd., White Colne, Essex, and Peter C. Deeks, 24 Nunns Meadow, Gosfield, Essex, both of England

Filed Nov. 9, 1981, Ser. No. 319,276

Claims priority, application United Kingdom, Nov. 14, 1980, 8036703

Int. Cl.³ G01N *35/08*

U.S. Cl. 73—864.22 **12 Claims**



1. A sampling device comprising a source of suction, a probe having a passage connected to the suction source whereby a first solution comprising liquid sample can be aspirated into said passage by suction from said source, said probe being

movable so that its tip can be located at a first position in which said passage can receive said sample and a second position, the means for delivering a second solution to said probe while it is in said second position, said means comprising a vertically arranged tube which is substantially coaxial with said probe when said probe is in said second position, the upper end of said tube being beneath but sufficiently close to the tip of said probe in said second position that the tip of said probe extends into a meniscus that forms at the top of said tube when said second solution overflows said tube, solution supply means connected with the lower end of said tube for supplying solution to the top of the tube, and solution drain means arranged beneath the top of the tube for collection and removal of excess solution overflowing the top of the tube.

4,434,673

CROSS ARM STRUCTURE FOR USE IN A PUSHBUTTON TUNER

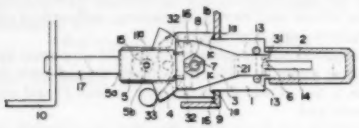
Takao Chaki, Saitama, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,618

Claims priority, application Japan, Jun. 11, 1980, 55-80262[U]; Jun. 11, 1980, 55-70265[U]; Jun. 11, 1980, 55-80266[U]; Jun. 11, 1980, 55-80267[U]; Jun. 11, 1980, 55-80268[U]

Int. Cl.³ H03J *5/12*; G05G *1/02*

U.S. Cl. 74—10.33 **8 Claims**



1. A cross arm structure for use in a pushbutton tuner, comprising:

a cross arm member;

a frequency setting member pivotally supported on said cross arm member;

a pushbutton slidably supported on said cross arm member for movement between locked and unlocked positions;

a movably supported pressing member responsive to movement of said pushbutton and adapted to apply pressure to said frequency setting member in response to movement of said pushbutton to said locked position so as to releasably lock said frequency setting member in a predetermined angular position; and

early lock preventing means which includes an early lock preventing member cooperable with said pressing member for preventing said pressing member from releasably locking said frequency setting member before said pushbutton is substantially in said locked position;

wherein said pressing member has a pedal portion at each side of an end thereof which can engage said frequency setting member and has a concave portion between said pedal portions which receives an end portion of said early lock preventing member.

4,434,674

PISTON AND CYLINDER MECHANISM

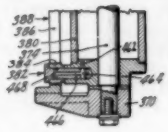
Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 179,381, Aug. 18, 1980, Pat. No. 4,399,264. This application May 7, 1982, Ser. No. 375,846

Int. Cl.³ F01B *3/00*; F16H *25/18*

U.S. Cl. 74—99 A **2 Claims**

1. In a piston and cylinder mechanism wherein said cylinder moves relative to said piston and said cylinder has a cam follower extending outwardly therefrom for engaging a cam track, said cylinder having some lubricant therein, the improvement comprising a cam follower shaft mounted in the base of said cylinder and extending radially outwardly from said cylinder, a cam follower roller mounted on said shaft, and



conduit means in said base and said shaft providing communication between the interior of the cylinder and the inner surface of the cam follower roller contacting said cam follower shaft.

4,434,675

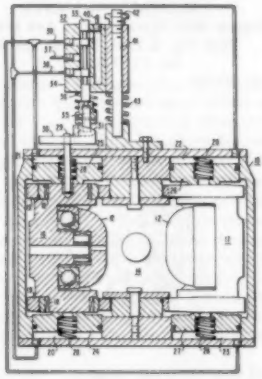
TRANSMISSION RATIO CONTROL ARRANGEMENT FOR A PRECESS CAM CONTROLLED INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Sep. 11, 1981, Ser. No. 301,442

Int. Cl.³ F16H *15/08*

U.S. Cl. 74—200 **7 Claims**



1. A transmission ratio control arrangement for an infinitely variable traction roller transmission comprising: a housing; coaxial input and output shafts rotatably supported in said housing; toroidal discs mounted opposite each other on said input and output shafts such that a toric cavity is formed therebetween; motion transmitting traction rollers disposed in said toric cavity in radial symmetry with respect to the axis of said input and output shafts; means for forcing said toric discs and said traction roller into firm engagement with each other for transmitting motion therebetween; a pivotal support structure for each of said traction rollers, each said support structure being movable in a direction of its pivot axis; at least one hydraulic operating structure disposed adjacent each traction roller support structure and operatively associated therewith for transmitting precess motion thereto; at least one of said traction roller support structures having a cam disc mounted thereon for axial and pivotal movement therewith; a master control valve arranged adjacent the cam surface of said cam disc, said control valve having a control member and a cam follower in contact with said cam surface, said cam follower having a predetermined position with respect to said cam surface for each transmission ratio of said transmission, said

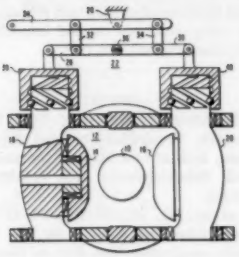
master control valve being connected to a pressurized fluid source and to each of said hydraulic operating structures for supplying pressurized fluid to said hydraulic operating structures or, respectively releasing hydraulic fluid therefrom when said cam follower is not in its respective predetermined position.

4,434,676

TRACTION ROLLER TRANSMISSION WITH MECHANICAL TRANSMISSION RATIO CONTROL

Paul L. Horton, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Mar. 22, 1982, Ser. No. 360,597
Int. Cl.³ F16H *15/40, 15/08*
U.S. Cl. 74—200 **5 Claims**



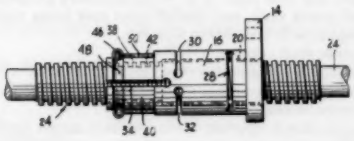
1. An infinitely variable traction roller transmission comprising: coaxial input and output shafts; toric traction discs mounted opposite each other, one on each of said shafts; two motion transmitting traction rollers arranged between, and in firm engagement with, said toric discs for the transmission of motion therebetween; a pivotal support trunnion for each of said traction rollers each rotatably supporting one of the rollers and being supported pivotally about an axis which extends normal to a plane including the axis of said input and output shafts; and a trunnion operating lever arrangement adapted to apply axial precess motion to said trunnions, said lever arrangement including two arms of equal length, one being pivotally connected to one and the other to the other trunnion and both being linked to each other at a central pivot axis and a control lever linked to said arms at locations having equal distances from said central pivot axis and being itself pivotally supported at the center between its points of linkage to said arms.

4,434,677

ANTI-BACKLASH SPRING-MOUNTED NUT

Francis M. Linley, Jr., Easton, Conn., assignor to Universal Thread Grinding Company, Fairfield, Conn.

Filed Apr. 22, 1981, Ser. No. 256,500
Int. Cl.³ F16H *55/18, 1/18, 27/02*
U.S. Cl. 74—409 **14 Claims**



1. A simplified anti-backlash nut construction having relatively few slots, comprising in combination:

(a) a base portion adapted to be carried by a supporting part and having a bore through which a screw can pass,

(b) a one-piece threaded portion connected to said base portion and characterized by a bore aligned with the bore of the base portion,

(c) said threaded portion having a pair of longitudinal slots in it by which it is divided into elements having internal surfaces at the bore thereof,

(d) said elements having thread formations on said internal surfaces, adapted for engagement with the external threads of a screw extending through said bores,

(e) said threaded portion having a cut-out configuration comprising a pair of circumferential slots characterized by two pairs of slot ends which are respectively located adjacent the ends of the said longitudinal slots, said cut-out configuration facilitating the limited movement of the said divided elements toward and away from each other, thereby to enable the thread formations thereof to engage a screw with no clearance and looseness,

(f) said pairs of slot ends and the respective ends of the said pair of longitudinal slots of the threaded portion being triangularly disposed, and the slot ends of said pair of circumferential slots being separated from each other by an uninterrupted solid wall of the threaded portion, which uninterrupted solid wall extends directly and in a straight line between the slot ends of the pair of circumferential slots so as to provide increased body strength at such location, and

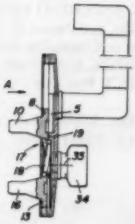
(g) yieldable means carried by said divided elements, biasing the same in directions toward each other so as to maintain them closely engaged with the said screw.

4,434,678

CONTROL MECHANISM FOR A WINDOW OR DOOR

Julius Maus, Stuttgart, Fed. Rep. of Germany, assignor to Gretsch-Unitas GmbH, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 285,933
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027810
Int. Cl.³ G05G *9/00*
U.S. Cl. 74—471 R **18 Claims**



1. A control device for selectively displacing two drive rod drivers comprising:

a housing having means defining a guide path therein;

a handle member rotatably mounted to said housing;

two drivers movable in said housing along said guide path;

means engaging said handle member with one of said drivers for movement of said one driver with rotation of said handle member;

a clutch in said housing for engaging the other of said drivers with said handle member for movement of said other driver with rotation of said handle member; and

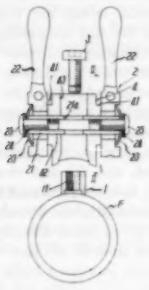
said clutch including a coupling element connected to one of said drivers movable into a first position engaged with the other of said drivers and into a second position out of engagement with the other of said drivers.

4,434,679

SPEED-CHANGE OPERATING DEVICE FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 19, 1981, Ser. No. 275,397
Claims priority, application Japan, Jun. 27, 1980, 55-91242[U]
Int. Cl.³ G05G 5/16, 13/00
U.S. Cl. 74—491 9 Claims



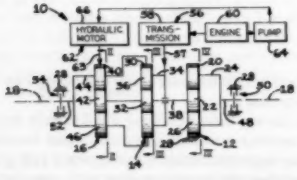
1. A speed-change operating device mounted directly on a frame of a bicycle comprising a bed fixed directly to said frame by a fixing means, a lever unit, and a screw member for mounting said lever unit on said frame in cooperation with said bed, said bed having only a screw thread screwable with said screw member, said lever unit comprising a lever shaft, a control lever having a boss, and a holding means for holding said control lever in position at said lever shaft, said holding means assembling said control lever on said lever shaft and including a restraining means contacting with the lateral surface of said boss at said control lever and restraining said control lever from axially moving and a biasing means for biasing said control lever to said restraining means with a given frictional force, said screw member being screwable with said bed to mount said lever unit on said frame.

4,434,680

PLANETARY STEERING DIFFERENTIAL

Craig W. Riediger, Pekin, and James E. Winzeler, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01126, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980, PCT Pub. No. WO82/00867, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 2, 1980, Ser. No. 262,054
Int. Cl.³ F16H 37/06, 1/42
U.S. Cl. 74—682 41 Claims



1. A planetary steering differential (10) adapted to be driven in use by a transmission (58) and a steering motor (66), comprising:

a first input member (57) adapted to be driven by the transmission (58);

a second input member (63) adapted to be driven by the steering motor (66);

first and second output members (48,52);

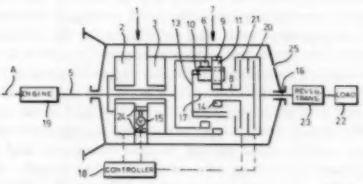
planetary means (12,14,16) for rotating said first and second output members (48,52) in the same direction and at the same speed in response to rotation solely of said first input member (57) and holding said second input member (63) stationary with the speed of the first and second output members (48,52) being reduced from the speed of the first input member (57), and for rotating said first and second output members (48,52) in opposite directions at the same speed in response to rotation solely of said second input member (63) through a single steering input power path and holding said first input member (57) stationary, said planetary means (12,14,16) including first, second and third interconnected planetary mechanisms (12,14,16) individually having single ring gear, sun gear and planet carrier elements (20,22,24,30,32, 34,40,42,44), one of said elements (30,32,34,40,42,44) of said second and third planetary mechanisms (14,16) being connected to said first input member (57) and another one being connected to said second input member (63), said planetary mechanisms (12,14,16) being arranged on and interconnected solely along a common central axis (18).

4,434,681

HYDROMECHANICAL DRIVE

Ehrlinger Friedrich, Freidrichshafen, and Michael Meyerle, Meckenbeuren, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 103,437, Dec. 14, 1979, abandoned.
This application Dec. 4, 1981, Ser. No. 327,690
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854375
Int. Cl.³ F16H 47/04
U.S. Cl. 74—687 5 Claims



1. A hydromechanical transmission comprising:

a power shaft driven by a prime mover;

a hydrostatic unit with a driving element and a driven element fluidically coupled to each other for joint rotation at a speed ratio variable between predetermined negative and positive limits, said driving element being positively coupled to said power shaft for rotation thereby;

a planetary-gear train with a first and a second input gear and one output gear centered on a common axis, a planet carrier rotatable about said axis, a first pinion on said planet carrier in mesh with said first input gear and a second pinion on said planet carrier in mesh with said first pinion, with said second input gear and with said output gear, said first input gear being positively coupled with said power shaft, said second input gear being positively coupled with said driven element;

an output shaft coupled to a load;

a first clutch operable to couple said output shaft with said planet carrier in a range of low speeds of said output shaft relative to said power shaft;

a second clutch operable to couple said output shaft with said output gear in a range of high speeds of said output shaft relative to said power shaft; and

control means coupled with said hydrostatic unit and with said clutches for varying said speed ratio between said negative and positive limits in each of said ranges and for alternately operating said clutches, with a switchover from one clutch to the other at a point where said speed

ratio is at said positive limit with said planet carrier, said input gears and said output gear all co-rotating at the same speed.

4,434,682

PLANETARY GEAR

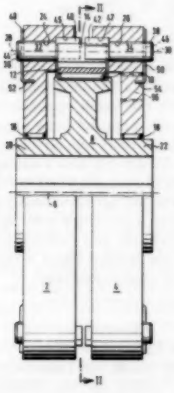
Kurt G. Fickelscher, Frankenthal, Fed. Rep. of Germany, assignor to Balcke-Duerr AG, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 299,124

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034133

Int. Cl.³ F16H *1/28, 55/14*

U.S. Cl. 74—805 **14 Claims**



1. In a planetary gear having two adjacent identical central wheels with teeth of different pitch and a planet wheel whose pitch is equal to that of a virtual tooth row formed by the central wheel teeth and whose teeth extend into tooth gaps in the virtual tooth row, the planet wheel being arranged fro guided slaving by a rotary disk, at least two of said three mentioned wheels having pivotable teeth, the teeth of both the central wheels and the planet wheel being of substantially triangular cross section with plane tooth profiles, the improvement wherein the pivotable teeth of at least one of said central wheels are arranged on journals.

4,434,683

SAW-ADVANCING MEANS WITH EDGE ENGAGING PAD

Peter D. Kaye, Monroe, Oreg., assignor to Bell Industries, Inc., Los Angeles, Calif.

Filed Apr. 5, 1982, Ser. No. 365,621

Int. Cl.³ B23D *63/14*

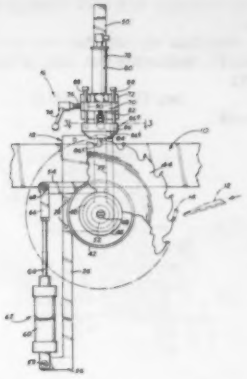
U.S. Cl. 76—37 **10 Claims**

1. In apparatus for grinding the teeth in a circular saw:

saw-mounted means for mounting the saw with said saw being rotatable about its axis,

a compressible pad disposed radially outwardly of the periphery of a saw mounted on said saw-mounting means, and

power-operated means for moving said pad radially inwardly against the periphery of said saw and in a path



extending about the axis of the saw whereby the saw is rotated about its axis by said pad.

4,434,684

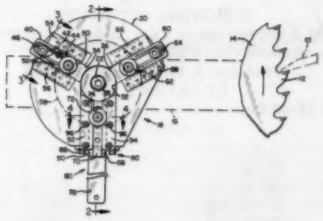
SELF-CENTERING SAW MOUNT

Keith L. Nixon, Pleasant Hill, Oreg., assignor to Bell Industries, Inc., Los Angeles, Calif.

Filed Apr. 12, 1982, Ser. No. 367,583

Int. Cl.³ B23D *63/14*

U.S. Cl. 76—37 **8 Claims**



1. In a grinding machine, including a power-driven grinding wheel,

means for rotatably mounting a circular saw with the edge of the saw moveable with rotation of the saw to place successive teeth in a position to be ground by the grinding wheel comprising:

a mounting plate,

first, second and third guide mounts mounted on said mounting plate for movement in paths which diverge from each other extending outwardly from substantially a common center, each guide mount mounting a guide adapted to engage the edge in a saw which defines the eye of the saw,

means for securing a pair of said guide mounts in selected adjusted positions in their said paths, and

biasing means yieldably urging the third guide mount outwardly in its path.

4,434,685

APPARATUS FOR CUTTING SAW TEETH INTO SAW BLADES OR SAW BANDS

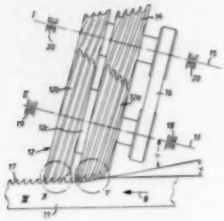
Erwin Junker, Talstrasse 78, D 7611 Nordrach-Baden, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,120

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022292

Int. Cl.³ B23D *63/12*

U.S. Cl. 76—38 1 Claim



1. An apparatus for forming a saw blade or a saw band by forming saw teeth in a solid stock moving continuously in a longitudinal direction, said apparatus comprising:

grinding wheel means for grinding away portions of the stock to form saw teeth therein;

said grinding wheel means being mounted for rotation about an axis which is inclined at an acute angle to and which diverges from the direction of movement of the stock;

said grinding wheel means having a generally frustoconical configuration and an outer periphery defined by first and second axially distinct helical grinding ribs having different contours; and

said grinding wheel means comprising first and second separate grinding wheels mounted on a common shaft in axially spaced relationship, and said first and second grinding ribs being formed on said first and second grinding wheels, respectively.

4,434,686

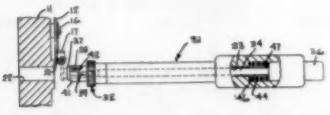
ADJUSTING APPARATUS

Dennis M. Ryan, San Mateo, Calif., assignor to AMPEX Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,726

Int. Cl.³ B25B *25/00*

U.S. Cl. 81—3 R 10 Claims



1. Apparatus for the relative positional adjustment of a pair of elements having freedom of relative motion in a first direction, characterized in that:

a first of said elements is relieved to define a reference bore adjacent an edge of the other and second element, said bore having an axis lying in a plane normal to said first direction;

an adjusting element is provided fitting for snug rotation in said bore;

said adjusting element having a portion engaging said second element in substantially non-slip engagement for causing said relative motion of said first and second elements upon rotation of said adjusting element in said bore; and

means are provided for securing said adjusting element against rotation in said bore when a desired adjustment has been completed.

4,434,687

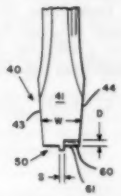
DAMAGED SCREW REMOVER

Anthony N. Vickio, Montour Falls, N.Y., assignor to Vi-Tek Designs, Inc., Montour Falls, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,174

Int. Cl.³ B25B *15/00*

U.S. Cl. 81—441 10 Claims



1. A damaged screw remover comprising a shank having a longitudinal axis of rotation, a handle mounted to said shank, and a blade integral with the shank opposite the handle, the blade having two generally opposed faces joined together by sides and a working end, the working end including an axially-disposed projecting tip for driving into a damaged screw slot and setting the same therein by cutting into the damaged screw slot and radially-disposed end surfaces flanking the tip, each end surface deployed at an acute angle with respect to one of the opposed faces, wherein the end surfaces join the faces at sharp edges which are the leading edges when the damaged screw remover is rotated counterclockwise.

4,434,688

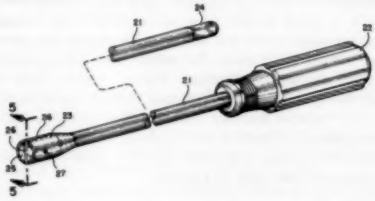
SCREWDRIVER

Corwin Bowles, 795 E. 980 South, Salt Lake County, Utah 84107

Filed Dec. 7, 1981, Ser. No. 328,371

Int. Cl.³ B25B *15/00*

U.S. Cl. 81—451 5 Claims



1. An improved screwdriver comprising a shank, one end of said shank having a screw head receiving means including a screw head receiving cavity adapted to receive at least a portion of the head of a screw to be driven to thereby prevent lateral motion of the shank with respect to the screw head, the other end of the shank being adapted to have drive means secured thereto; a blade means receiving slot in said screw head receiving means extending beyond the screw head receiving cavity; blade means adapted to removably slip into the blade means receiving slot and be held therein against rotational movement relative to the shank and in position so that a portion of the blade extends across the screw head receiving cavity to thereby mate with the slot of a screw head inserted into the cavity; a hole extending through the screw head receiving means and the blade means perpendicular to the blade means receiving slot, the ends of such hole being visable on opposite sides of the screw head receiving means and visable to a user of the screwdriver so as to show the orientation of the blade means within the screw head receiving cavity; and pin

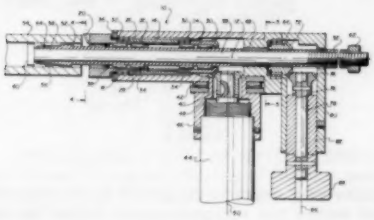
means removably secured in said hole to hold said blade means in position.

4,434,689

CUTTER HEAD DRIVE SHAFT FOR PORTABLE TUBE END PREPARATION TOOL

Lawson H. Nall, Folsom, and Richard Miller, Citrus Heights, both of Calif., assignors to Tri Tool Inc., Rancho Cordova, Calif.

Filed Aug. 9, 1982, Ser. No. 406,541
Int. Cl.³ B23B *27/00, 5/16*
U.S. Cl. 82—4 C **3 Claims**



1. In a portable tube end preparation tool including a housing extending along a longitudinal axis; a cutter head mounted at one end of the housing for rotation about said longitudinal axis; a cutter head drive shaft means connected to said cutter head for transmitting rotational drive force thereto and including a drive shaft means within the housing, the improvement comprising: said drive shaft means comprising a three-piece assembly including a first cylindrical shaft portion connected directly to the cutter head and extending along said longitudinal axis; a second cylindrical shaft portion axially aligned and concentrically disposed with respect to said first shaft portion, said first and second shaft portions including external threads adjacent their adjoining ends; an internally threaded coupling sleeve bridging the adjoining ends of said first and second shaft portions and threadedly connected thereto for joining the assembly together; and axially spaced rolling bearing means within the housing disposed along said longitudinal axis at opposite ends of said coupling sleeve, said bearings respectively engaging said first and second shaft portions; said coupling sleeve, in cooperation with said bearings, restraining longitudinal and radial motion of said first and second drive shaft portions with respect to said housing.

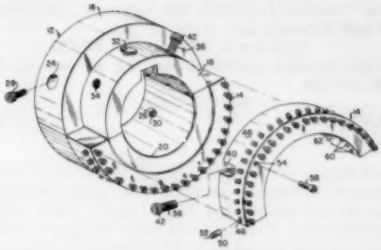
4,434,690

ROTARY PRESS PUNCH RING AND METHOD OF CHANGING PUNCHES CARRIED THEREBY

Richard L. Mauer, Fort Lee, N.J., assignor to Rapid Ring Co., Inc., East Hanover, N.J.

Filed Jan. 15, 1982, Ser. No. 339,749
Int. Cl.³ B26F *1/00*
U.S. Cl. 83—13 **17 Claims**

13. A method of changing punches carried by a rotary press punch ring which includes a collar mounted on a shaft of a rotary press for rotation therewith, a plurality of punch ring segments, each punch ring segment having an outer circumferential surface which forms at least a part of an outer circumferential surface of said rotary press punch ring, attaching means provided in said outer circumferential surface of each of said punch ring segments for removably and interchangeably attaching each of said punch ring segments to said collar independently of the other punch ring segment or segments, said attaching means including at least one fastener for each punch ring segment, each fastener extending through its corresponding punch ring segment into engagement with said collar, and receiving means provided in said outer circumferential surface of each of said punch ring segments for releaseably receiving several punches per punch ring segment, said method comprising the steps of disengaging said fastener or fasteners of one of said punch ring segments from said collar by moving said fastener or fasteners away from said outer circumferential surface of said one punch ring segment in a generally radial direction relative to said shaft of said press, removing said one punch ring segment from said collar by moving said one punch ring segment away from said collar in a generally radial direc-



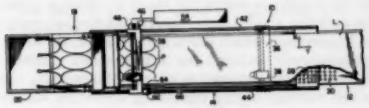
tion relative to said shaft of said press without removing or otherwise disturbing the other punch ring segment or segments, whereby the several punches on said one punch ring segment may be collectively removed from said press as a group, and then replacing said one punch ring segment with an identical punch ring segment equipped with several new punches.

4,434,691

METHOD AND APPARATUS FOR SEALING CUT SHEET MATERIAL

Claude W. LeBlond, Enfield, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Apr. 12, 1982, Ser. No. 367,429
Int. Cl.³ B26D *3/00, 7/02*
U.S. Cl. 83—56 **16 Claims**



1. An automatically controlled cutting machine for cutting layups of limp sheet material comprising:

a cutting table defining a support surface on which a multiply layup of limp sheet material is spread for cutting;

a tool carriage movable back and forth over the cutting table and having a cutting tool movable with the carriage to perform cutting operations on the material;

vacuum generating means connectable with the layup of sheet material on the support surface for generating a vacuum within the layup and compressing the sheet material on the support surface;

a first roller rotatably mounted to the tool carriage for movement with the carriage and cutting tool relative to the cutting table and a layup of sheet material on the support surface;

a second roller rotatably mounted to the cutting table in parallel and generally aligned relationship with the first roller;

an elongated strip of air-impermeable overlay material having opposite ends wound on the first and second rollers respectively with a portion of the strip extending between the rollers for sealing cut sheet material in a layup on the support surface of the cutting table;

first retracting means connected with the first roller for

winding the strip of air-impermeable overlay material onto the first roller; and

second retracting means connected with the second roller for winding the strip of air-impermeable overlay material onto the second roller.

4,434,692

GRID-TYPE BREAD-SLICING MACHINE

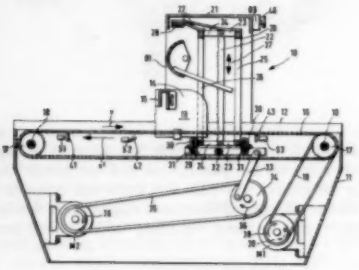
Jean-Marie G. Desert, Rue des Chataigniers 32, B 4480 Oupeye, and Franciskus J. Walrave, Rue Lieutenant Albert Dressen 6, B 4860 Pepinster, both of Belgium

Filed Jun. 8, 1981, Ser. No. 271,697

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021284

Int. Cl.³ B26D *1/11*

U.S. Cl. 83—62 **7 Claims**



1. A grid-type bread-slicing machine comprising a chain-driven loaf carriage and a knife grid each driven by an electric drive motor, wherein the rate of feed of said loaf carriage is controlled automatically by a control system for the drive motor thereof according to the cutting effort required by the knife grid at any particular cutting point in the bread, there being no movement between the carriage and the bread during cutting thereof, characterised in that the electrical supply circuit for the drive motor for the loaf carriage chain drive system includes a solid state current-limiting element for its power requirement which limits the current to the drive motor and progressively reduces the rotary speed thereof as the power requirement increases as a result of increasing resistance to the loaf carriage during the slicing operation, and an interruptor, said interruptor being responsive when said current limiting element is operative to reduce the speed of said drive motor.

4,434,693

PLATE POSITIONING APPARATUS

Kinji Hosoi, Machida; Hiroyuki Takeda, Yokohama; Hisao Kobayashi, Yamanashi, and Daijiro Konaka, Zama, all of Japan, assignors to Nihon Early Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 359,081

Claims priority, application Japan, Aug. 14, 1979, 54-111253

Int. Cl.³ B21D *28/04, 26/28, 43/00*

U.S. Cl. 83—71 **4 Claims**

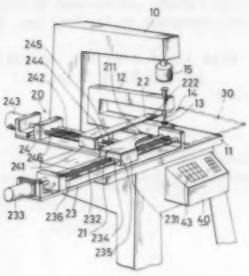
1. A plate positioning apparatus for use with a punch machine having a punch, comprising:

a number one workpiece stopper movable back and forth along an X axis and having its leading edge perpendicular to the axis of motion and further having a cutout space on the inner corner of its leading edge,

(b) a number one motor for moving said number one workpiece stopper back and forth along the X axis and controlling said number one workpiece stopper so that its leading edge at its forwardmost position is in front of the punch of the punch machine,

(c) a number two workpiece stopper movable along a Y axis perpendicular to the X axis, having its leading edge perpendicular to the axis of motion, and having a cutout section in its leading edge adequate to allow the passage of the punch,

(d) a number two motor for moving said number two workpiece stopper to and fro along the Y axis and controlling said number two workpiece stopper so that the cutout section in its leading edge at its forwardmost position is directly under the punch, and



(e) a control apparatus for independently operating said number one and number two motors.

4,434,694

FOOD MATERIAL SLICING MACHINE

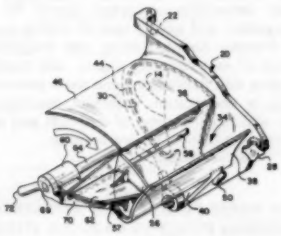
Hans-Hermann Scharsig, Offenburg, Fed. Rep. of Germany, assignor to Hobart Corporation, Troy, Ohio

Filed Mar. 10, 1982, Ser. No. 356,871

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113638

Int. Cl.³ B26D *7/06*

U.S. Cl. 83—411 R **7 Claims**



1. A food material slicing machine having a housing with an open bottom, a vertical cutter mounted in the housing for rotation on a horizontal axis, a stationary cutter cover lying in a vertical plane parallel to and closely adjacent said cutter and having an opening therein exposing a portion of said cutter to enable passage through the opening of food such as fruits and vegetables to be cut, characterized in that:

a hopper extending horizontally outwardly from the cutter cover is pivotally mounted on the cover on an axis below and parallel to the axis of rotation of the cutter, the hopper having a bottom and side walls but being open throughout its length on the top side thereof for receiving food material to be cut and further having an open discharge end adjacent said cutter cover, the pivotal axis for the hopper enabling the hopper to be moved laterally between a first position in which the discharge end of the hopper is remote from the opening in the cover and a second position wherein the discharge end of the hopper aligns with the

opening so that food material in the hopper can be pushed through the opening toward the cutter, a cutter cover plate mounted for movement with the hopper to cover the opening when the hopper is in the first position, a pusher plate mounted in the hopper for horizontal movement between a first position at the end of the hopper remote from the cutter and a second position at the discharge end of the hopper to urge food material through the opening, and a hopper cover plate extending the full length of the hopper and mounted on the cutter cover in a position to expose the top open side of the hopper when the hopper is in the first position and to cover the open side of the hopper when it is in its second position.

4,434,695

HOLDER FOR A ROLLER SLITTING KNIFE

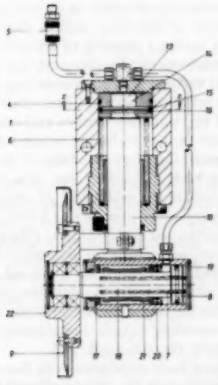
Peter Wingen, Hauptstrabe, Fed. Rep. of Germany, assignor to Dienes Werke fur Maschinenteile GmbH & Co. KG, Hauptstrabe, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,804

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047980

Int. Cl.³ B26D *7/26*

U.S. Cl. 83—482 **12 Claims**



1. A holder for a roller slitting knife comprising:

a first selectively-operable piston assembly including a first piston rod and a first cylinder housing, said first piston rod having a reduced diameter end portion to which a non-circular, cross-sectional portion is selectively secured, said non-circular portion being received in a mating bore of said housing to prevent rotation of said first piston rod in said housing;

a second selectively-operable piston assembly including a second piston rod and a second piston cylinder housing mounted to said first assembly and disposed for operation in a direction transverse to operation of said first piston assembly; and,

a roller slitting knife mounted to said second piston assembly whereby said knife is selectively positioned for operation upon selective operation of said first and second piston assemblies wherein said non-circular cross-sectional portion is selectively disassociable from a remainder of said first piston rod whereby said first piston rod can be rotated by approximately 180° to enable said knife to be converted from a right-handed attack to a left-handed attack.

4,434,696

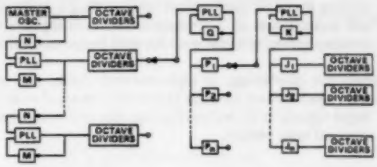
INSTRUMENT FOR COMPARING EQUAL TEMPERAMENT AND JUST INTONATION

Harry Conviser, 1335 Woodruff Ave., Los Angeles, Calif. 90024

Filed Nov. 20, 1981, Ser. No. 323,682

Int. Cl.³ G10H *5/07*

U.S. Cl. 84—1.01 **12 Claims**



8. In an electronic musical instrument having a single master oscillator for generating frequencies of predetermined scales through a series of stages, each stage multiplying the input thereto by a selected numerical ratio M/N, the combination further having an Exclusive-OR gate with one input connected to receive a signal whose frequency is multiplied by said M/N ratio, and the other input connected to receive said signal through a frequency counter having a dividing factor of n, where n is an integer, thereby generating an effective ratio of $n-1/n$ at the Exclusive-OR gate output for a frequency applied to a subsequent stage from the output of said Exclusive-OR gate, said master oscillator and each subsequent stage having octave divider means to provide an extended range of said predetermined scales.

4,434,697

INDICATOR APPARATUS FOR INDICATING NOTES EMITTED BY MEANS OF A MUSICAL INSTRUMENT

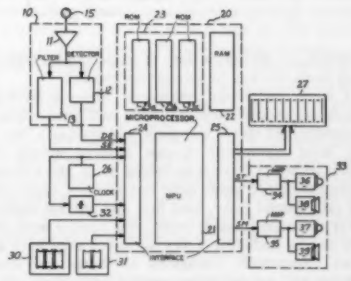
Henri Roses, 11 rue Mably, 21000-Dijon, France

PCT No. PCT/FR80/00189, § 371 Date Aug. 24, 1981, § 102(e) Date Aug. 24, 1981, PCT Pub. No. WO81/01898, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 24, 1980, Ser. No. 296,413

Int. Cl.³ G04F *5/02*; G09B *15/02*; G10G *7/02*

U.S. Cl. 84—454 **11 Claims**



1. Apparatus for indicating the presence of musical notes and for identifying the musical notes detected comprising:

means for amplifying input signals corresponding to musical notes to be identified;

filter means connected to said means for amplifying for eliminating harmonics from said input signals;

energy detecting means connected to said means for amplifying for detecting input signals exceeding a predetermined threshhold;

memory means including at least one memory for storing items of information representing a table of musical notes;

means for calculating the frequency and octive of said input

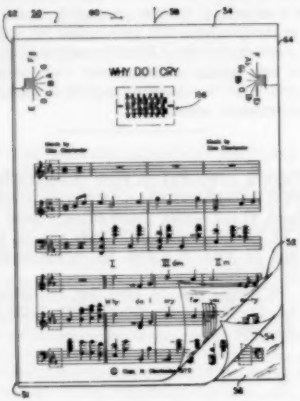
signal, said means for calculating including microprocessor means and being connected to said filter means, said energy detecting means and said memory means, said means for calculating being responsive to input signals received from said filter means exceeding said predetermined threshhold determined by said energy detecting means to calculate the frequency thereof, said frequency calculated being employed to read from said memory for storing items of information representing a table of musical notes items of information representing the closest corresponding musical note for said frequency calculated; and

means for displaying, in alphanumeric form, said musical note read closest to each successive musical note in said input signals to be indentified and the octive in which said musical note resides.

4,434,698

TRANSPOSABLE SHEET MUSIC

Charles N. Oberlander, El Paso, Tex., assignor to Ronald H. Mishkin, Lake Hopatcong; James T. Pappas, Chatham and W. Patrick Quast, Waldwick, all of, N.J., part interest to each

Filed May 4, 1981, Ser. No. 259,808
Int. Cl.³ G10G *1/04*
U.S. Cl. 84—483 A **15 Claims**

1. A system for devising a sheet of music and for transposing the music from one key to another comprising:

a first layer comprising transparent material having first indicia disposed thereon including staff lines, a first set of predetermined music notations, and opaque areas; a second layer comprising opaque material having second indicia disposed thereon including notes, and a second set of predetermined music notations; said first layer overlaying said second layer, said first and second layers relatively movable to each other; said opaque areas of said first indicia including a key signature area having windows substantially configured as sharps and flats and wherein said second indicia on said layer of opaque material includes a key signature area having a plurality of sharps and flats, substantially configured as such, and means for aligning said first layer and said second layer,

whereby a desired key for the music can be selected, such that upon alignment of the sharp or flat windows of the selected key permit corresponding sharps or flats in the key signature area on said layer of opaque material to be visible therethrough; and whereby various ones of said second indicia on said second layer are obscured by corresponding opaque areas on said first layer.

2. A system for devising a sheet of music and for transposing the music from one key to another comprising:

first and second overlays of transparent material, having first indicia disposed thereon including staff lines, respective sets of predetermined music notations, and opaque areas;

a layer of opaque material movably interposed between said first and second overlays, said layer having second indicia disposed on at least one side thereof, including notes, and a second set of predetermined music notations; said opaque areas of said first indicia including a key signature area having windows substantially configured as sharps and flats and wherein said second indicia on said layer of opaque material includes a key signature area having a plurality of sharps and flats, substantially configured as such, and

means for aligning said layer of opaque material with at least one of said overlays having said first and second printings thereon,

whereby a desired key for the music can be selected, such that upon alignment of the sharp or flat windows of the selected key permit corresponding sharps or flats in the key signature area on said layer of opaque material to be visible therethrough; and, various ones of said second indicia on said layer of opaque material are obscured by corresponding opaque areas on said transparent overlays.

14. A system for devising a sheet of music and for transposing the music from one key to another comprising:

a first layer comprising transparent material having first indicia disposed thereon including staff lines, a first set of predetermined music notations, and opaque areas; a second layer comprising opaque material having second indicia disposed thereon including notes, and a second set of predetermined music notations;

said first layer overlaying said second layer, said first and second layers relatively movable to each other;

said opaque areas of said first indicia, including a key signature area having a plurality of vertical lines printed therein at predetermined locations on said staff lines, a first set of said vertical lines corresponding to the sharps and a second set of said vertical lines corresponding to the flats, said key signature area of said opaque area of said first indicia further including window areas configured to represent the cross members of the sharps and the remaining body portion of the flats, and wherein said second indicia on said layer of opaque material includes a key signature area having a plurality of cross members of sharps and body portion of flats in predetermined locations, and means for aligning said first layer and said second layer, whereby a desired key for the music can be selected and whereby upon alignment the windows in the key signature area for the selected key permit corresponding indicia representing sharps and flats to be visible therethrough, and

whereby the vertical lines associated with the selected key signature cooperate with the indicia viewed through the windows to present to the observer the desired notation for the selected key and whereby various ones of said second indicia on said second layer are obscured by corresponding opaque areas on said first layer.

4,434,699

AMMUNITION FEEDER

Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Continuation of Ser. No. 91,329, Nov. 5, 1979, abandoned. This application Oct. 15, 1981, Ser. No. 311,585
Int. Cl.³ F41D *10/30, 10/32*
U.S. Cl. 89—12 **16 Claims**

1. A dual feeder for a gun having a housing and a rotor with a plurality of gun barrels and a like plurality of gun bolts, comprising:

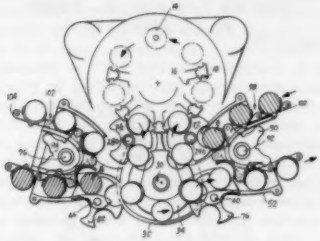
a source of positive drive;

a first endless conveyor means, adapted to be driven positively by said positive drive source, for in-feeding a first train of rounds of ammunition;

a second endless conveyor means, adapted to be driven

positively by said positive drive source, for in-feeding a second train of rounds of ammunition;

a third means including a sprocket having cutouts for receiving rounds passing towards the gun bolts and for receiving rounds passing from the gun bolts, driven positively by said positive drive source, for receiving and for placing onto the gun bolts rounds of ammunition in sequence;



a fourth means for coupling said first conveyor means to said positive drive source and to said third means for the positive feeding of rounds to said third means and for concurrently decoupling said second endless conveyor means, and for coupling said second endless conveyor means to said positive drive source and to said third means for the positve feeding of rounds to said third means and for concurrently decoupling said first endless conveyor means.

4,434,700

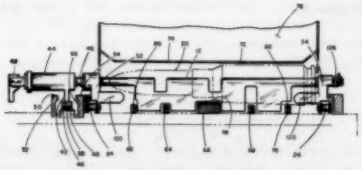
AUTOMATED AMMUNITION MIXER

Anthony J. Aloi, Richmond; George D. Brooks, South Burlington, and Ronald E. Prince, Colchester, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Jan. 4, 1982, Ser. No. 336,791

Int. Cl.³ F41F *9/02*; F42B *39/10*; B65G *47/10*

U.S. Cl. 89—34 **8 Claims**



1. An ammunition sorting system comprising:

a plurality of storage means, each adapted to releasably store a different type of ammunition;

a conveyor system including in sequence a plurality of rungs,

each rung movable between two alternative positions,

one position wherein said rung provides a passageway in the conveyor adapted to receive therein a round of ammunition from one of said plurality of storage means,

the other position wherein said rung precludes entry of a round into said passageway; and

means for selecting the position of each rung as it passes each of said plurality of storage means.

4,434,701

APPARATUS FOR CONVEYING CYLINDRICAL OBJECTS SUCH AS AMMUNITION

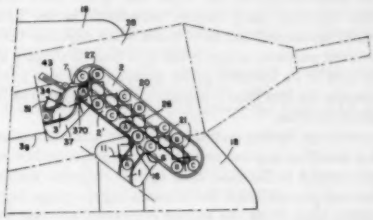
Herve Voillot, Sartrouville, France, assignor to Creusot-Loire, Paris, France

Filed May 26, 1981, Ser. No. 267,303

Claims priority, application France, May 23, 1980, 80 11622; Jul. 4, 1980, 80 14977

Int. Cl.³ F41H *7/06*; F41F *9/02*

U.S. Cl. 89—36 K **12 Claims**



1. Apparatus for conveying a succession of cylindrical objects such as ammunition by means of a series of rotary drive members each constituted by at least two separate seating plates fixed on a shaft, said shafts being driven to rotate in synchronism and disposed parallel and equidistant from each other along a cylindrical surface parallel to inner and outer members spaced by a distance at least equal to the diameter of said objects, the inner guiding member being positioned along a surface enveloping the bottoms of the seats of said plates, the whole forming a guideway for advancing objects by successive displacements, said guideway being constituted by three successive parts respectively forming an upstream guideway (1), an intermediate guideway (2) and a downstream guideway (3), said intermediate guideway (2) being constituted by one part of a magazine (20) the other part of which is constituted by an additional guideway (2') which is closed at its two ends on said intermediate guideway (2) so as to form a closed guideway bounded by inner (23') and outer (22') guiding members disposed as extensions of the guiding members (23, 22) of the intermediate guideway (2) and associated with a series (21) of seating plates forming a closed chain of seats with the plates of said intermediate guideway, said outer guiding member (22') being interrupted at the entry and exit of said intermediate guideway (2), respectively, for the passage of objects coming from said upstream guideway (1) and going to said downstream guideway (3), said magazine being associated with two switches (6, 7) respectively positioned at the ends of said intermediate guideway (2) and with individual means for orienting the upstream (6) and downstream (7) switches alternately into a first position assuring continuity of said intermediate guideway (2) respectively with said upstream guideway (1) and with said downstream guideway (3) and a second position assuring continuity of said intermediate guideway (2) with said additional guideway (2') forming the other part of said magazine.

4,434,702

TELESCOPING PERISCOPE

Marvin J. Rozner, Ventura, and Arthur S. Chapman, Santa Barbara County, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 8, 1982, Ser. No. 356,002

Int. Cl.³ F41G *1/40*

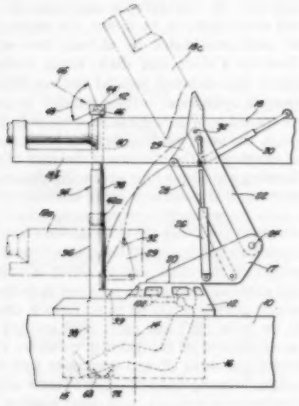
U.S. Cl. 89—36 L **2 Claims**

1. In a military vehicle having a turret rotatable in the azimuth plane, a main gun externally mounted on the roof of the turret, first power means for moving the gun bodily between a lowered prone position adjacent the turret roof and a raised

prone position remote from the turret roof, and second power means for swinging the gun around a first horizontal axis to vary the elevational firing angle of the gun: the improvement comprising a periscope extending upwardly from the turret in the space alongside the gun;

said periscope including a first stationary support tube extending upwardly from the turret roof to a point near the upper surface of the gun when the gun is in its lowered prone position, a second tube telescopically slidably extendable from the stationary support tube, a third tube slidably telescopically extendable from the second tube, a first head carried on the upper end of the third tube for three hundred sixty degree movement in the azimuth plane, the second and third tubes being movable between lowered positions wherein the first head is slightly above the gun in its lowered prone position to raised positions wherein the first head is slightly above the gun in its raised prone position;

said periscope further including a second head carried on the first head for angular motion around a second horizontal axis normal to the tube axis, optical elements within the first and second heads for transmitting an image from the second head along the second horizontal axis and thence



downwardly along the tube axis, and mirror means at the lower end of the second tube for receiving the image from the first head and reflecting said image upward parallel to the tube axis;

a stationary reflector arranged to receive the upwardly directed beam from the mirror means;

and power means for simultaneously moving said second and third tubes at different speeds such that the first head and mirror means move away from each during the raise motion of the periscope and toward each other during lowering motion of the periscope, the movement speed of the third tube being one half the movement speed of the inner tube so that the optical path from the second head to the stationary reflector has a constant length in all adjusted positions of the second and third tubes;

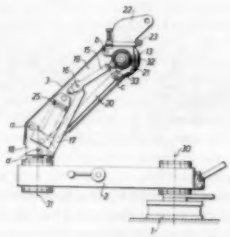
said power means comprising a first sprocket mounted on the second tube near its lower end, a second sprocket mounted on the second tube near its upper end, a first chain extending from a fixed anchorage downwardly around the first sprocket and thence upwardly to an anchorage on the third tube, and a second chain extending from an anchorage on the third tube upwardly around the second sprocket and thence downwardly to an anchorage on the stationary support tube.

4,434,703

GUN-MOUNT FOR A MACHINE GUN SUPPORTED BY A FORK OR FOR A WEAPON OF A SIMILAR KIND WITH MEANS FOR CONTINUOUSLY VARIABLE ADJUSTMENT OF THE ELEVATION OF THE UPPER SWIVEL ARM

Jorgen L. Fog, Skovlunde, and Jorgen Nielsen, Farum, both of Denmark, assignors to Disa A/S (Dansk Industri Syndikat A/S), Herlev, Denmark

Filed Jun. 4, 1981, Ser. No. 270,331
Int. Cl.³ F41F *23/00*
U.S. Cl. 89—37 B **3 Claims**



1. Gun mounting apparatus, comprising:

a pair of swivel arms including an upper arm and a lower arm pivotally connected together at one end thereof for rotation of the upper arm about an axis, said upper swivel arm being in the form of a parallelogram including an upper long side in the shape of a hollow box which surrounds the lower long side and the upper and lower short sides of said parallelogram;

a gun mount attached to the free end of said upper arm; and

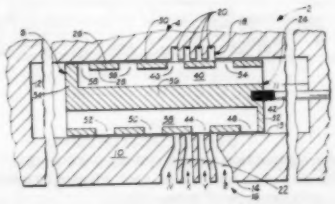
height adjustment means for adjusting the height of said free end of said upper arm, including a connecting rod means of variable length connected between two sides of the parallelogram and geared control means for changing the length of said connecting rod means.

4,434,704

HYDRAULIC DIGITAL STEPPER ACTUATOR

Jim B. Surjaatmadja, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 14, 1980, Ser. No. 140,126
Int. Cl.³ F15B *15/22*
U.S. Cl. 91—25 **8 Claims**



1. An apparatus for converting pressure, exerted by a pressurizing substance between a pressure source and a pressure sink, into increments of displacement, each increment having a length S, said apparatus comprising:

a housing including a wall having four grooves defined in spaced relationship to each other on an interior surface of said wall and said wall further having four holes defined therethrough so that each hole extends from a respective one of the grooves to an exterior surface of said wall, said

grooves and holes thereby defining four ports of said housing, each of said grooves being 0.5 S wide and being spaced from each adjacent groove on centers spaced 1.0 S; and

a double-acting piston disposed for movement in said housing in response to the pressurizing substance, said piston including:

a side wall having an inner surface and an outer surface and further having a first plurality of apertures and a second plurality of apertures defined in said side wall so that each of said apertures extends from the inner surface to the outer surface, each of said apertures having a diameter of 1.5 S with each aperture of said first plurality of apertures being spaced on a center separated a distance of 4.0 S from a center of each adjacent aperture of said first plurality of apertures and with each aperture of said second plurality of apertures being spaced on a center separated a distance of 4.0 S from a center of each adjacent aperture of said second plurality of apertures, said first plurality of apertures including a first aperture and a second aperture and said second plurality of apertures including a third aperture, wherein:

said third aperture is defined in said side wall so that said third aperture registers with a first one of said ports when said first aperture registers with a second one of said ports and further so that said third aperture registers with said second one of said ports when said first aperture overshoots in a first direction said second one of said ports; and

said second aperture is defined in said side wall so that said second aperture registers with said first one of said ports when said first aperture overshoots in said first direction said second one of said ports, said first, second and third apertures thereby providing feedback means for precisely positioning said piston relative to said housing;

a first end wall closing a first portion of a first end of said side wall and leaving a second portion of said first end open;

a second end wall closing a first portion of a second end of said side wall and leaving a second portion of said second end open; and

a central wall extending from said first end wall to said second end wall and from a first region of the inner surface of said side wall to a second region of the inner surface of said side wall so that a first chamber extending from the first end wall to the open portion of the second end of said side wall and a second chamber extending from said second end wall to the open portion of the first end of said side wall are formed, wherein said first plurality of apertures communicates with said first chamber and wherein said second plurality of apertures communicates with said second chamber.

4,434,705

INTRODUCED IN THE HYDRAULIC ACTUATION FOR THE ALTERNATIVE MOVEMENTS OF THE SWINGING ARMS OF PETROLEUM EXTRACTOR MACHINES

Pedro Roquet Jorda, Antonio Figueras, St. No. 83, Tona (Barcelona), Spain

Continuation of Ser. No. 91,856, Nov. 6, 1979, abandoned. This application Oct. 30, 1981, Ser. No. 315,590

Int. Cl.³ F01L *25/06*

U.S. Cl. 91—50 **1 Claim**

1. A single-stroke hydraulically-powered reciprocating drive mechanism comprising:

(i) a source of fluid under pressure

(ii) a hydraulic ram including a cylinder, and a piston reciprocable in the cylinder and defining therein a a chamber of variable volume,

(iii) a spool valve having first and second positions

(iv) valve striker means moving with the hydraulic ram and changing the spool valve from one position to another at each end of the stroke of the hydraulic ram,

(v) a resiliently-loaded two-way valve having an inlet connected in a first position to a first outlet, said valve being arranged upon decrease of back pressure in the first outlet to move to a second position in which the inlet is also connected to a second outlet,

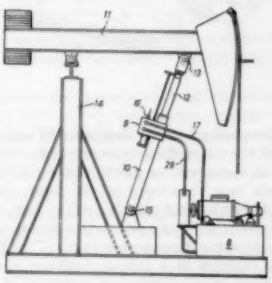
(vi) a resiliently-loaded braking valve having conditions of lesser and greater opening,

(vii) first conduit means connecting the source of fluid under pressure to the inlet of said two-way valve and to said braking valve,

(viii) second conduit means connecting the second outlet of said two-way valve and said spool valve to exhaust to said source of fluid under pressure,

(ix) third conduit means connecting said braking valve to said chamber of variable volume, and

(x) fourth conduit means connecting the first outlet of said



two-way valve to said spool valve, the arrangement being such that in said first position of said spool valve corresponding to a powered stroke of said hydraulic ram, the spool valve closes the fourth conduit means and the resultant higher differential pressure maintains the two-way valve in its first position so that fluid under pressure in the first conduit means maintains the braking valve in its condition of greater opening so that fluid passes through the third conduit to the chamber of variable volume to actuate the ram, whereas at the end of the powered stroke the spool valve is moved to its second position in which it provides a communication between the fourth and second conduit means and as a result the differential pressure reduces and permits the two-way valve to move to its second position to connect the first and second conduit means, thereby permitting exhausting of fluid from said chamber of variable volume through said third conduit means, said braking valve in its condition of lesser opening, and said first and second conduit means.

4,434,706

POWER-ASSISTED STEERING DEVICE FOR A VEHICLE

Patrice Bertin, Paris, France, assignor to Valeo, Societe Anonyme, Paris, France

Filed Jul. 14, 1981, Ser. No. 283,155

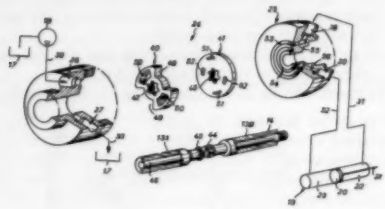
Claims priority, application France, Jul. 17, 1980, 80 15790; Jun. 29, 1981, 81 12714

Int. Cl.³ F15B *9/08*

U.S. Cl. 91—375 A **7 Claims**

1. In a power-assisted steering device for a vehicle, comprising control means operable to act on steering means, said control means having a transmission element in two parts which parts are capable of limited relative angular displacement under the action of said control means, and power-assistance means responsive to relative angular displacement of said parts to act on said steering means in the same sense as the control means, said power-assistance means comprising a hy-

draulic unit having fluid-pressure means and a fluid reservoir, an actuator acting on the steering means, and a hydraulic distributor interposed between the hydraulic unit and the actuator, said distributor comprising a stator having a pressure orifice connected to the fluid-pressure means, a return orifice connected to the fluid reservoir, and two service orifices connected to the actuator, and two adjacent rotors, located within the stator and which are respectively operable to rotate integrally with said two parts of the transmission element, a first of said rotors having distribution passages interacting with said pressure and return orifices, whilst the second rotor is provided with distribution passages which interact both with the



distribution passages of the first rotor **40** and with the service orifices of the stator the improvement in which the pressure orifice and return orifice of the stator communicate respectively with two chambers, one of these chambers being a peripheral chamber and communicating directly with distribution passages of the first rotor, which passages comprise apertures located along the outer periphery of the first rotor, whilst the other chamber is a central chamber and communicates directly with other distribution passages of the first rotor, which passages comprise apertures located adjacent the inner periphery of the first rotor, said first rotor being located within the axial dimension of both of said chambers.

4,434,707

VACUUM TYPE BRAKE BOOSTER DEVICE FOR VEHICULAR USE

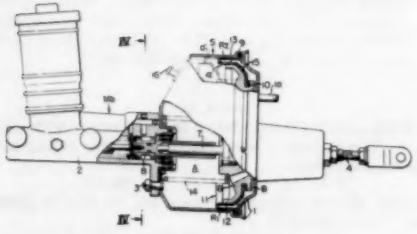
Hiroo Takeuchi, Asashina; Nobuaki Hachiro, and Yoshihisa Miyazaki, both of Ueda, all of Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Nov. 2, 1981, Ser. No. 317,011

Claims priority, application Japan, Nov. 19, 1980, 55-162832; Apr. 4, 1981, 56-50816

Int. Cl.³ F15B *9/10*; F16J *3/02*

U.S. Cl. 91—376 R **2 Claims**



1. A vacuum type brake booster device for vehicular use comprising a booster shell of substantially elliptical shape in transverse cross-section, a booster piston corresponding in shape to the booster shell and accommodated therein for axial reciprocating movement, and a diaphragm having outer and inner peripheral portions sealingly secured, respectively, to the booster shell and the booster piston so as to divide the interior space of the booster shell into a first working chamber in communication with a vacuum source and a second working chamber adapted to be selectively placed in communication with the first working chamber and the external atmosphere by switching valve means, said diaphragm being of substantially elliptical shape in transverse cross-section and including a pair of opposite straight peripheral wall sections and a pair of opposite arcuate peripheral wall sections interconnecting said straight peripheral wall sections, said arcuate peripheral wall sections having a greater thickness than that of said straight peripheral wall sections, said arcuate peripheral wall sections of said diaphragm each having a rear surface including a raised arcuate rib for abutting engagement with a rear wall of the booster shell.

4,434,708

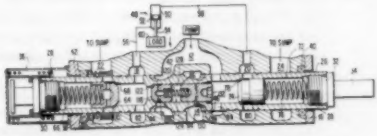
CONTROL VALVE FOR DOUBLE-ACTING PISTON AND VALVE ASSEMBLIES

Charles J. Bowden, Battle Creek, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 5, 1982, Ser. No. 355,006

Int. Cl.³ F15B *11/08*

U.S. Cl. 91—436 **17 Claims**



1. An improved control valve for use with a double-acting piston and cylinder assembly, said valve comprising:

a valve body having a cylindrical bore therein;

at least one inlet chamber in said body with said cylindrical bore for receiving fluid from an external supply;

at least one outlet chamber in said body communicating with said cylindrical bore for discharging fluid to an external reservoir;

a first cylinder chamber in said body communicating with said cylindrical bore for delivering fluid to and receiving fluid from one side of an external double-acting piston and cylinder assembly;

a second cylinder chamber in said body communicating with said cylindrical bore for delivering fluid to and receiving fluid from the other side of the same external double-acting piston and cylinder assembly;

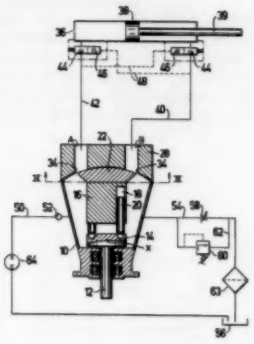
a valve plunger positioned to slide within said bore, said plunger comprising in operative association with said inlet and outlet chambers and with said first and second cylinder chambers, first means for selectively delivering fluid from said inlet chamber to one of said first and second cylinder chambers, second means for selectively delivering fluid from the other of said first and second cylinder chambers to said outlet chamber and third means responsive to a predetermined pressure differential between said first and second cylinder chambers for directing fluid from the one of said cylinder chambers receiving high pressure fluid from the contracting side of the double-acting piston and cylinder assembly, to the other of said cylinder chambers delivering relatively lower pressure fluid to the expanding side of the double-acting piston and cylinder assembly; and

pressure responsive valve means connected in series with said second means for controlling the pressure of fluid flowing from the contracting side of the double-acting piston and cylinder assembly, via said second means, to said at least one outlet chamber.

4,434,709
AXIAL PISTON PUMP

Bo L. Grelsson, Kantarellvägen 5, S-860 21 Sundsbruk, Sweden

PCT No. PCT/SE80/00050, § 371 Date Oct. 23, 1980, § 102(e) Date Oct. 10, 1980, PCT Pub. No. WO80/01822, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 22, 1980, Ser. No. 197,095
Claims priority, application Sweden, Feb. 23, 1979, 7901669
Int. Cl.³ F01B 13/04
U.S. Cl. 91—506 15 Claims



1. In an axial piston pump comprising:

(a) a drive plate

(b) a rotatable cylinder block tiltable relative to said drive plate in at least one direction

(c) at least one piston mounted slidably in a cylinder of said cylinder block, said piston having a reciprocating movement imparted thereto upon rotation of said cylinder block when said cylinder block is tilted, relative to said drive plate, out of a neutral position in which no pumping is effected,

(d) a distribution plate adjustable jointly with said cylinder block and including two slots which act as inlet and outlet slots respectively, depending upon the direction of tilting of the cylinder block,

(e) a stationary port plate comprising exhaust and reflux ports respectively for the outflow of pumped fluid from the pump to an hydraulic system and for reflux of the used fluid from said hydraulic system to a hydraulic reservoir, one of said slots of said distribution plate, acting as an outlet slot by the adjustment of the distribution plate, being brought into gradually increasing communication with that said port of the said port plate which is serving as an exhaust port as a consequence of the tilting of said distribution plate out of neutral position, the improvement which comprises, in combination:

(i) said port plate has at least one additional and separate feed opening located in said port plate for each tilting direction for supply of fluid to the pump,

(ii) the positioning of said exhaust and reflux ports and said feed opening of said port plate is such that said outlet and inlet slots of said distribution plate, as a result of said tilting of said distribution plate out of neutral position, are brought into gradually increasing communication with said feed opening and said exhaust port for outflow of fluid from the pump,

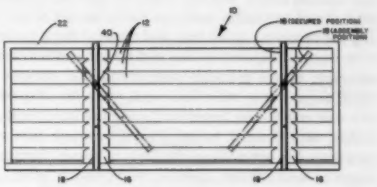
(iii) the reflux port for reflux of fluid to the hydraulic reservoir is gradually opened by said distribution plate, and

(iv) said reflux port and said feed opening are placed in communication with a housing for the pump serving as a hydraulic reservoir for the pump.

4,434,710
GRILLE MOUNTING MEANS AND METHOD

Theodore S. Bolton, Liverpool; Brad G. Leech, Fayetteville, and Richard D. Lang, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 259,869, May 4, 1981, abandoned. This application Nov. 1, 1982, Ser. No. 437,919
Int. Cl.³ F24F 1/02
U.S. Cl. 98—94 AC 10 Claims



1. Apparatus for mounting spaced louvers to cover an opening in a building while allowing air flow therethrough which comprises:

a wall sleeve defining the opening, said wall sleeve including inwardly extending sleeve flanges and member support means associated with at least one sleeve flange; and

a grille assembly adapted to be mounted to the wall sleeve from the interior of the building to form a portion of the exterior of the building including

louver support means for maintaining the spaced louvers in a predetermined position, said louver support means engaging and extending inwardly from the louvers;

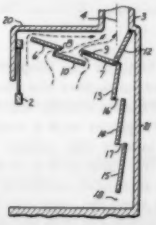
a grille frame defining a grille opening across which the spaced louvers are maintained, said frame including inwardly extending grille flanges which abut against the sleeve flanges upon assembly; and

a pair of mounting members rotatably secured to the louver support means and spaced from the louvers, said mounting members serving as a handle for manually manipulating the grille assembly from the interior of the building and further engaging the member support means to secure the grille assembly to the wall sleeve when rotated to the appropriate position.

4,434,711
FUME HOOD WITH DAMPER CONTROLLED BAFFLES AND METHOD

Jon A. Zboralski, Manitowoc, and Harry N. Grow, Two Rivers, both of Wis., assignors to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Dec. 24, 1980, Ser. No. 219,676
Int. Cl.³ F23J 11/00
U.S. Cl. 98—116 LH 10 Claims



1. A fume handling enclosure comprising a housing having top and rear walls meeting at an upper rear portion of said housing and having an exhaust opening located at said upper

rear portion; a top baffle within said housing extending along and spaced below said top wall to define a generally horizontal fume passage therebetween; said top baffle having a rear end spaced forwardly from said rear wall and being provided with a plurality of openings for receiving lighter-than-air gases into said horizontal fume passage for directing the same towards said exhaust opening; a rear baffle within said housing spaced forwardly from said rear wall for defining a generally vertical fume passage therebetween; said rear baffle having an upper end spaced below said top wall and disposed adjacent the rear end of said top baffle; said rear baffle having at least one opening for receiving gases into said vertical fume passage; a movable damper disposed within said housing adjacent said exhaust opening; means pivotally supporting said damper for movement about a generally horizontal pivot line disposed adjacent the rear end of said upper baffle and the upper end of said rear baffle; said damper being pivotal between first and second positions for controlling the flow of fumes through said passages to said exhaust opening; said damper when in said first position substantially closing said vertical fume passage and opening said horizontal fume passage to said exhaust opening, and when in said second position substantially closing said horizontal fume passage and opening said vertical fume passage to said exhaust opening; and activating means connected to said damper and extending externally of said housing for controlling the position of said damper from the exterior of said housing.

4,434,712

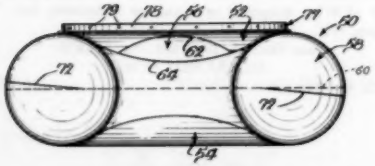
SILO BREATHER BAG

Ashley M. Ross, Highland Park, and James A. McKee, Elmhurst, both of Ill., assignors to Fabrico Manufacturing Corp., Chicago, Ill.

Filed Feb. 26, 1982, Ser. No. 352,788

Int. Cl.³ A01F *25/22*; B65D *30/10*

U.S. Cl. 99—646 S **5 Claims**



1. A tubluar silo breather bag adapted to be inflated to a generally partial torus or weiner-like configuration; said bag comprising when inflated a flexible top panel and a flexible bottom panel sealed together with a seam along overlapping edges on the outer convex side surface, a flexible transition panel sealed to said top panel with a seam along overlapping edges, and a flexible side panel extending from one end of the bag to the other end along the inner concave curvature of the bag, said side panel defining at each end of the bag a generally convex end surface extending from said inner curvature to said outer convex side surface with only one dart seam in said convex end surface and being sealed with a seam along its peripheral edges to said top, bottom and transition panels.

4,434,713

CALENDER

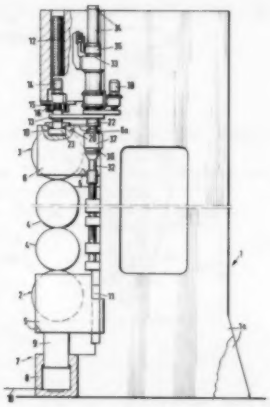
Gerhard Hartwich; Josef Pav, both of Krefeld, and Dieter Preuss, Kaarst, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 19, 1981, Ser. No. 323,095

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043901

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—168 **17 Claims**



1. A calender comprising a support; a plurality of superjacent rolls having first and second end portions, adjacent to said support and including a lowermost and an uppermost roll; first and second bearings for the respective end portions of said rolls; guide means provided for said bearings on said support; means for normally maintaining the bearings for said lowermost roll at a predetermined level; first and second displacing means for moving the respective bearings for said uppermost roll downwardly through a first range of distances; and first and second pressure transducer means interposed between the respective bearings for said uppermost roll and the respective displacing means and operative to move said uppermost roll downwardly, while said displacing means is idle, through a second range of distances which is a small fraction of said first range.

4,434,714

APPARATUS FOR SCREEN PRINTING BOTTLES

Guy Combeau, Le Moulin de la Mie, Saint-Priest sous Aixe, 87700 Aixe sur Vienne, France

Filed Mar. 4, 1982, Ser. No. 354,624

Claims priority, application France, Mar. 4, 1981, 81 04370; Mar. 4, 1981, 81 04371

Int. Cl.³ B41F *17/22*

U.S. Cl. 101—38 A **16 Claims**

1. A container printing assembly comprising:

a frame;

conveyor means movably mounted on said frame for conveying a plurality of containers in step-by-step fashion;

a drying station connected to said frame for receiving a rear portion of said conveyor means and formed of an enclosure having an adjustable selected length adapted to a speed of said conveyor for permitting drying of ink applied to the containers, said drying station having an entrance and an exit for said conveyor means;

a discharge station associated with said frame adjacent said drying station enclosure outlet at which containers are discharge from said conveyor means;

a pick-up station associated with said frame adjacent said

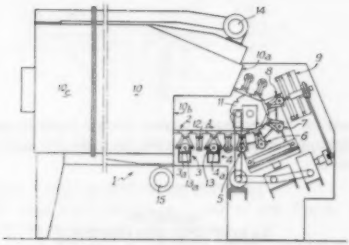
discharge station at which containers are picked up by conveyor means;

a treatment station associated with said frame adjacent said pick-up station for treatment of containers; and

a printing station including a printing head associated with said frame and positioned adjacent a forward end of said conveyor means and adjacent said treatment station and drying station enclosure entrance;

said conveyor means lying in a vertical plane and adapted to hold containers with longitudinal axes of the containers extending substantially horizontally and moving in parallel on said conveyor means;

said conveyor means comprising an endless chain with clamping members for holding each container by cooperation with a neck of each container during transport from one station to another, said endless chain moving entirely in said vertical plane, said conveyor means including a forward chain winding member around which said endless chain is wound at a forward end of said conveyor means;



each of said clamping members comprising a pair of arms each pivotally mounted to a base plate forming a link of said endless chain, a pinion connected to each arm adjacent a pivotal mounting thereof to said base plate and meashed with a pinion of the other arm in each clamping member, a wheel connected to one of said arms for pivoting said one of said arms for opening said clamping members;

a control chain movably mounted on said frame adjacent at least the forward portion of said conveyor means and engageable with each wheel for selectively opening and closing each of said clamping members; and

driving means engaged with said control chain for establishing equal and differential movements between said control chain and said conveyor means for opening and closing each of said clamping members.

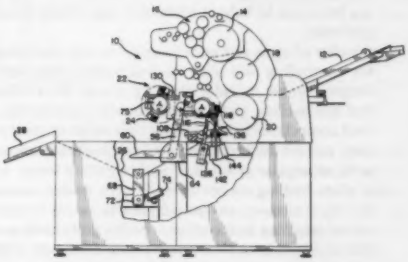
4,434,715

PRINTING APPARATUS INCLUDING SERIAL PRINTING MEANS

Max D. McHenry, Fremont, Calif., assignor to A. B. Dick Company, Chicago, Ill.

Filed Dec. 17, 1981, Ser. No. 331,630
Int. Cl.³ B41L *45/00*
U.S. Cl. 101—76 **18 Claims**

1. In a printing apparatus for serially printing characters on print stock being transported through the apparatus including separate serial printing heads, a movable mounting means for supporting the respective heads on opposite sides of the mounting means, and means for moving said mounting means between first and second positions for selectively locating one or the other of said heads in position for printing on said stock, the improvement comprising a support for said mounting means, said support and mounting means being fixed in an assembled relationship, means defined by said support for rotatably supporting said mounting means, means for moving said support back and forth generally along the path of movement of the stock, the movement of the support being between an operating position where one of the printing heads on the mounting means is in position for printing, and a non-operating position where neither of the heads is in position for printing, means for locking the assembly of the support and mounting means in place in the apparatus when said support is moved to the operating position to thereby locate a printing head in said position for printing, said mounting means, when the support is in non-operating position, being rotatable on the support to



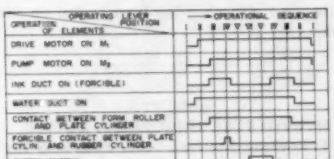
reverse the positions of said heads on said support, said mounting means being releasably fixed on said support whereby the mounting means can be lifted off said support when the support is in non-operating position and removed from the apparatus with a new assembly of mounting means and heads being substituted into the apparatus, and wherein a printing head not in the printing position is accessible to an operator of the apparatus when the support is located in operating position so that the printing head not in printing position can be reset while the apparatus is operating.

4,434,716

OPERATING LEVER DEVICE FOR PRINTING MACHINE

Koji Ishii, and Yoshinori Honkawa, both of Hiroshima, Japan, assignors to Ryobi Ltd., Fuchu, Japan

Filed May 20, 1981, Ser. No. 265,497
Claims priority, application Japan, May 27, 1980, 55-71148
Int. Cl.³ B41F *7/06*
U.S. Cl. 101—142 **13 Claims**



1. A printing machine having an operating lever device, comprising:

a plate cylinder;

means for loading plates onto said plate cylinder;

means for unloading said plates;

a blanket cylinder;

means for cleaning said blanket cylinder;

form rollers;

a form roller control mechanism;

a plate cylinder control mechanism;

a sheet feed;

a sheet feed control mechanism;

a water duct roller;
a water duct roller control mechanism;
a rubber cylinder;
an ink duct roller;
an ink duct roller control mechanism;
an operating lever device;
said operating lever device comprising an operating lever adapted to be set at any of a plurality of positions stepwise and a set cam secured to an operating shaft which is fixedly secured to said operating lever, said set cam holding said operating lever in such a manner that said operating lever can be held at more than one of said plurality of positions;
a plurality of cams and arms coupled to said operating shaft for controlling said plate loading means, plate unloading means, blanket cylinder cleaning means, form roller control mechanism, plate cylinder control mechanism, sheet feed control mechanism, water duct roller control mechanism and ink duct roller control mechanism in accordance with an angular position of said operating lever;
said plate loading means comprising a switch mechanism having a memory circuit adapted to be set to open and closed positions in accordance with a plate loading operation and to store a plate loaded state during an additional plate loading operation which is carried out upon completion of a first plate loading operation;
an automatic returning mechanism for returning said operating lever to at least one of said plurality of positions, said automatic returning mechanism comprising at least one solenoid, said automatic returning mechanism being operated by said solenoid according to a rotational position of said rubber cylinder, said automatic returning mechanism being operatively coupled to said operating lever, said solenoid being coupled to be energized upon completion of a printing operation to successively return said operating lever to at least one of said plurality of positions;
at least said water duct roller control mechanism and said form roller control mechanism being operatively coupled to said operating lever to be operated before a plate loading operation of said plate loading means by setting said operating lever stepwise to cause said form rollers to contact said plate cylinder; and
said ink duct roller control mechanism being coupled to said operating shaft in such a manner that ink is supplied in a step in which said form rollers contact the surface of said plate and the surface of said plate contacts said rubber cylinder after said plate has been loaded on said plate cylinder.

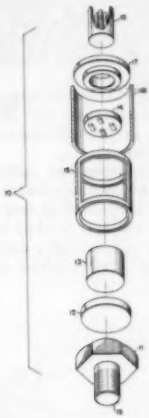
4,434,717

HYBRID FUSE TRIGGERING DEVICE

Lawrence F. Erickson, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1981, Ser. No. 295,175
Int. Cl.³ F42C *11/02*
U.S. Cl. 102—210 **12 Claims**

1. A fuze triggering device, for fuze detonated weapons, comprising:
a base;
means for mounting said device attached to said base;
means for insulating the upper surface of said base attached thereto;
means for generating an electrical signal from "g" loading, mounted on said insulating means;
an electronics wafer, having a preprinted circuit therein, electrically connected to said signal generating means;
means for enclosing said insulating means, said generating means and said wafer, hermetically sealed to said base;
an apertured cover for said enclosing means, hermetically sealed thereto; and



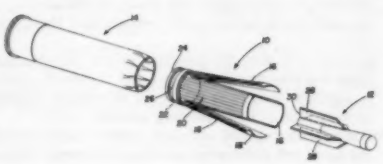
means for connecting extended electric leads to said wafer through said apertured cover, hermetically sealed to said cover.

4,434,718

SABOT AND PROJECTILE

Paul J. Kopsch, 710 Cooper Foster Park Rd., Lorain, Ohio 44053; Donald F. Ward, 48264 Telegraph Rd., South Amherst, Ohio 44001; Jay Graber, 7370 Amity Pike, Plain City, Ohio 43064, and Omer Nichols, R.D. 8, Box 175, Greensburg, Pa. 15651

Filed Sep. 11, 1981, Ser. No. 301,444
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—522 **2 Claims**



1. A self-separating sabot for use in combination with a projectile for firing through a shotgun bore, comprising:
(a) An elongated cylindrical sabot body having a base portion at the aft end thereof and a plurality of longitudinally extending segments open at the forward end thereof, said sabot body having a metallic disc positioned on the inside surface of said base defined by the closed end of said segments, and wherein said base portion is thicker than said longitudinally extending segments, and wherein said longitudinally extending segments have inscribed thereon, a plurality of longitudinally extending grooves for reducing friction between said sabot and said shotgun bore: and
(b) a projectile adapted for insertion in said sabot body, said projectile having a plurality of eccentrically placed fins at the aft end thereof, said fins being supported by said metallic disc, said projectile being further defined in that the greater portion of its weight is positioned in the forward third of said projectile; and
(c) means for propelling said sabot body and projectile through and out said barrel; and
(d) said longitudinally segmented ends being responsive to

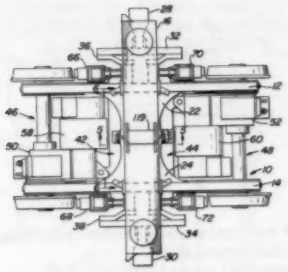
air forces such that said segments open in a radially outwardly direction thereby separating from said projectile.

4,434,719

STEERING MOTORIZED TRUCK

George Mekosh, Jr., Warrington, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 28, 1981, Ser. No. 306,156
Int. Cl.³ B61F *3/04, 5/38, 5/52*
U.S. Cl. 105—168 **6 Claims**



1. A forced steerable truck for a railway car body comprising:

(a) a main frame secured to said car body;

(b) said main frame including a pair of side frames and a bolster secured to said side frames;

(c) a pair of "C" shaped steerable sub-frames each having two arm portions extending from a connecting portion;

(d) means for interconnecting the connecting portions of said sub-frames to each other,

(e) menas for pivotally connecting said connecting portions of said main frame;

(f) said means for pivotally connecting comprising a vertical hanger member connected between each of said arm portions and said main frame;

(g) a wheel axle assembly secured between each of said two arm portions of said sub-frames;

(h) means for connecting the two arm portions of each of said sub-frames to the ends of said side frames;

(i) a steering link member connected between said main frame and one of said steering sub-frames;

(j) said steering link member being adapted to be connected at different locations on said main frame to provide understeering or oversteering;

(k) a vertical pivot member extending from said bolster;

(l) a bracket connected to one of said steering sub-frames; and

(m) said steering link member being pivotally mounted to said vertical pivot member at one end and resiliently mounted to said bracket at the other end;

whereby said steering sub-frames are forced to move in accordance with the movement of said car body with respect to said sub-frames.

4,434,720

MULTI-RATE SIDE BEARING FOR A RAILWAY TRUCK

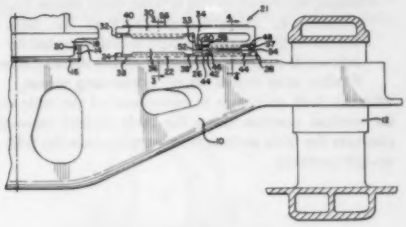
Harry W. Mulcahy, Griffith, Ind., and Horst T. Kaufhold, Chicago, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Feb. 18, 1982, Ser. No. 349,717
Int. Cl.³ B61F *5/14*
U.S. Cl. 105—199 CB **9 Claims**

1. A railway truck comprising a truck bolster, a center plate opening in the truck bolster adapted to receive a center plate therein,

two side bearing assemblies on the top surface of the truck bolster with one of said side bearing assemblies located on each side of the center plate opening,

each side bearing assembly comprising a base plate affixed to the truck bolster and an upper plate, a first resilient device located between the base plate and the upper plate, and a



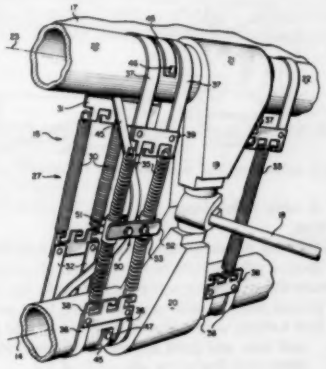
second resilient device located between the base plate and the upper plate and outboard in relation to said center plate opening from the first resilient device, said first resilient device having a lower compression rate than the second resilient device, and said first resilient device having a lower shear rate than the second resilient device.

4,434,721

ANTI-SNAP DEVICE FOR DRAFTING BOARD TILTING MECHANISM

Huey G. Shelton, Winnetka, and Leonard N. Zack, Mount Prospect, both of Ill., assignors to Huey Company, Franklin Park, Ill.

Filed Apr. 5, 1982, Ser. No. 365,663
Int. Cl.³ A47F *5/12;* **A47B** *9/02*
U.S. Cl. 108—4 **6 Claims**



1. In a spring balancing system for an adjustable drafting table, said table including first and second horizontally-extending members fixed respectively to a table stand and to a table surface, said system using a tilt spring means partly wrapped in first and second directions about said members for statically balancing said table surface at any tilt position in a 90 degree arc between the horizontal and the vertical, an anti-snap device for resisting and slowing table surface movement to the vertical, said anti-snap device comprising:

a flexible, non-extensible strap means connected at its ends to and extending between the first and second horizontally extending members and wrapped partly about said members in directions opposite to said first and second directions for preventing the table surface from moving beyond a vertical position; and

connecting means for connecting a center portion of said flexible strap means to said tilt spring means;

the flexible strap means and the tilt spring means being normally spaced apart from one another when the flexible strap means is tightened in the absence of the connection via the connecting means,

wherein tightening of the flexible strap means between the horizontally extending members as the table surface moves to the vertical is controllably resisted by a partly sidewards extension of the tilt spring means caused by the flexible strap means via the connecting means,

whereby such resistance to movement of the table surface to the vertical position slows the table surface movement and prevents the table surface from snpping into the fully vertical upright position.

4,434,722

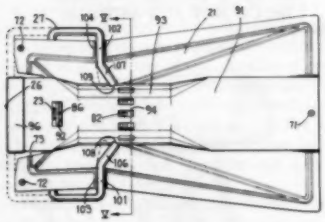
TILT SUPPORT FOR OVERBED TABLE TOP AND VERTICAL LOCK ASSEMBLY THEREFOR

Robert A. Solomon, Kalamazoo, and John J. Dellinger, Portage, both of Mich., assignors to Am Fab, Inc., Kalamazoo, Mich.

Filed May 22, 1981, Ser. No. 267,092

Int. Cl.³ A47B *23/00, 27/18*

U.S. Cl. 108—8 **18 Claims**



7. A table, comprising:

a base;

a table top pivotally supported on said base for movement about a substantially horizontal first pivot axis;

means for releasably securing said table top in a selected pivotal position with respect to said base, including:

first locking means provided on one of said table top and said base and fixed against movement relative thereto about said first pivot axis;

an elongate member movably supported on the other of said table top and said base and having second locking means thereon, said second locking means being movable in a direction substantially radially of said first pivot axis between positions spaced from and operatively engaged with said first locking means by moving said elongate member;

first means for resiliently urging said second locking means toward one of said engaged and spaced positions;

second means for resisting movement of said elongate member about said first pivot axis relative to said other of said table top and said base; and

selectively actuable disabling means cooperable with said elongate member when said second locking means is in said engaged position for preventing movement of said second locking means away from said engaged position.

4,434,723

FLUIDIZED-BED COMBUSTION APPARATUS

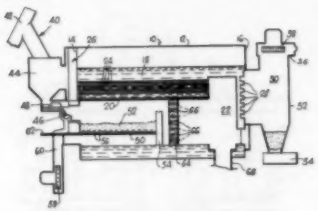
Leslie Brealey; John H. Wilson, and Niyazi Demircan, all of Derby, England, assignors to Northern Engineering Industries, Plc., England

Filed Nov. 27, 1981, Ser. No. 325,598

Claims priority, application United Kingdom, Nov. 28, 1980, 8038370

Int. Cl.³ F23D *19/02*

U.S. Cl. 110—245 **1 Claim**



1. Fluidised bed combustion apparatus comprising:

(a) a horizontal furnace duct,

(b) bed containment means within said duct,

(c) particulate non-combustable inert fluidisable bed material forming a fluidisable bed in said containment means,

(d) first means operable to feed particulate solid fuel to said bed in said containment means through an upstream end of said duct,

(e) second means operable to feed air into said bed to fluidise the same,

(f) said containment means comprising at a downstream end of said bed a bed-retaining wall extending upwardly above said fluidised bed when slumped and having an upper edge spaced from the duct thereabove forming an opening,

(g) said first and second means being operable during combustion of fuel in said bed so as to cause generation of flue gases at velocities leaving said bed which results in inert bed material being elutriated in said flue gases and being carried thereby out of the containment toward a downstream end of the bed and through the opening between the duct and the bed-retaining wall,

(h) a combustion chamber into which said duct opens located downstream of the bed-retaining wall,

(i) horizontal firetubes located outside of said duct and connected downstream of and to the combustion chamber for receiving flue gases therefrom,

(j) the maximum gas velocity of the flue gases passing through the opening over the said bed-retaining wall being considerably higher than the terminal velocity of elutriated bed materials carried therein with the result that, in the absence of other means, bed material would be undesirably conveyed by the flue gases into the said firetubes and thus be unrecoverable,

(k) and means located downstream of the said containment means and in the flue gas path for reducing the maximum velocity of the flue gases downstream of the said containment means below the terminal velocity of the said bed materials to cause most of the elutriated bed material to be removed in the combustion chamber and thus to prevent substantial deposit of elutriated bed material in the firetubes, said velocity-reducing means comprising baffle means in said duct intermediate said bed-retaining wall and said combustion chamber, said baffle means comprising gas impermeable means spaced from said bed-retaining wall and having plural, spaced gas flow passages therein sized and distributed over the baffle means so as to reduce the flue gas flow velocity downstream of the baffle means below the maximum terminal velocity of the said bed materials so as to cause most of the elutriated bed materials to deposit in said combustion chamber and thus be

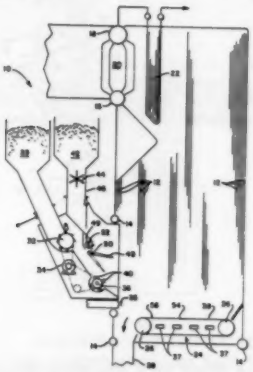
recoverable therefrom, said gas flow passages comprising a plurality of identical flow passages extending through said baffle means in which each said flow passage diverges in the direction of gas flow therethrough, and said baffle means comprising a wall of bricks at least some of which each defines one said flow passage therethrough.

4,434,724

OVERBED DISTRIBUTOR FOR FEEDING DUAL SOLID FUELS TO A STOKER FURNACE

Robert C. Kunkel, Jr., Feeding Hills, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 1, 1983, Ser. No. 481,214
Int. Cl.³ F23H *11/00*; F23K *3/16*
U.S. Cl. 110—269 **4 Claims**



1. In combination, a furnace for burning coal and cellulose fuel therein, a traveling grate in the furnace bottom having an upper run and a lower run, and also having a first end positioned adjacent a first wall of the furnace, and a second end located adjacent a second opposite wall of the furnace, a discharge shute located beneath the second end of the traveling grate through which ashes fall, means for continuously moving the upper run of the grate towards the second wall, first introduction means for introducing coal onto the grate near the first end, second introduction means for introducing cellulose fuel onto the grate at a central location, said second introduction means including a plate positioned above the second end of the grate, and a plurality of nozzle means supplied with pressurized air, which nozzle means are positioned such that they blow cellulose fuel supplied to the plate off of it onto the grate, and adjustable means for the second introduction means, by means of which the location at which the cellulose fuel is introduced onto the grate can be varied, said adjustable means including means for pivoting the plate so that it can be made to lie at a greater or lesser angle to the horizontal, and said adjustble means also including means for pivoting the nozzle means, so that they direct air jets directly at the cellulose fuel on the plate, or slightly above the fuel.

4,434,725

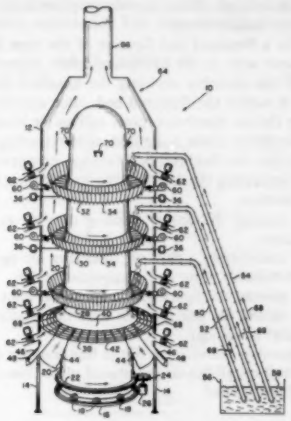
MASS BURNING SELF-CLEANING INCINERATOR

Samuel Foresto, 243 Willis Ave., Mineola, N.Y. 11501

Division of Ser. No. 348,977, Feb. 16, 1982, Pat. No. 4,366,759. This application Aug. 13, 1982, Ser. No. 407,813
Int. Cl.³ F23G *5/04*
U.S. Cl. 110—346 **6 Claims**

1. The method of burning mass amounts of refuse in an incinerator comprising conveying refuse to a plurality of rotating refuse burning grates arranged spaced one above the other while applying a fire to the refuse on the grates to burn and consume the same,

rotating the tiers on which refuse is deposited to subject the refuse thereon continuously to the fire created at the tiers to burn the same subsequently evenly, spacing the tiers relative to each other such that the flames of the refuse on a lower tier cause ignition of refuse on the next higher tier,



providing openings in the grates to enable the heat and fire from refuse burning on grates below to ignite and burn refuse on grates above and permitting the burned refuse that is consumed and reduced in size to fall to lower grates for burning and consumption thereat,

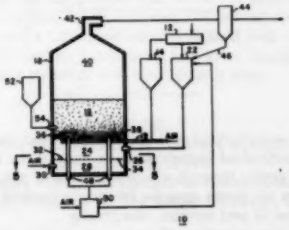
and providing for exhaust of the waste gases of combustion of the refuse from the incinerator to the atmosphere by a chimney.

4,434,726

FINE PARTICULATE FEED SYSTEM FOR FLUIDIZED BED FURNACE

Brian C. Jones, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 27, 1982, Ser. No. 453,543
Int. Cl.³ F22B *1/00*
U.S. Cl. 110—347 **14 Claims**



1. In a fluidized bed furnace of the type having a furnace chamber with an air distributor plate extending transversely across the chamber dividing the chamber into a combustion zone in which the fluidized bed, once established, is confined above the air distributor plate and an air inlet zone below the air distributor plate, a method of introducing particulate feed solids including both a coarse fraction and a fine fraction into the fluidized bed furnace, comprising the steps of:

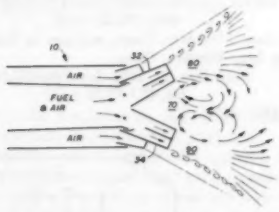
(a) passing the coarse fraction directly to the combustion zone;
(b) establishing a flow of fluidizing air up through the air distributor plate and combustion zone;
(c) passing the fine fraction to the air inlet zone;
(d) mixing the fine fraction with the fluidizing air in the air inlet zone; and
(e) passing the mixture of the fine fraction and fluidizing air up through the air distributor plate thence up through the the fluidized bed.

8. In a fluidized bed furnace of the type having a furnace chamber with an air distributor plate extending transversely across the chamber dividing the chamber into a combustion zone in which the fluidized bed, once established, is confined above the air distributor plate and an air inlet zone below the air distributor plate a method of introducing particulate feed solids into the fluidized bed furnace, comprising the steps of:
(a) separating the feed solids into a fine fraction and a coarse fraction;
(b) passing the coarse fraction directly to the combustion zone;
(c) establishing a flow of fluidizing air up through the air distributor plate and combustion zone;
(d) passing the fine fraction to the air inlet zone;
(e) mixing the fine fraction with the fluidizing air in the air inlet zone; and
(f) passing the mixture of the fine fraction and fluidizing air up through the air distributor plate thence up through the fluidized bed.

4,434,727
METHOD FOR LOW LOAD OPERATION OF A COAL-FIRED FURNACE

Michael S. McCartney, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 270,687, Jun. 4, 1981, abandoned, which is a continuation of Ser. No. 175,093, Aug. 4, 1980, abandoned, which is a division of Ser. No. 29,605, Apr. 13, 1979, Pat. No. 4,252,069. This application Jun. 13, 1983, Ser. No. 503,079
Int. Cl.³ F23K *3/02*
U.S. Cl. 110—347 **1 Claim**

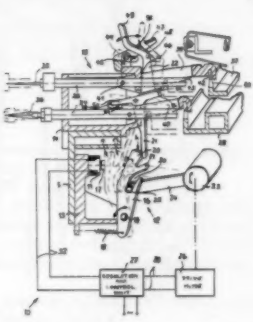


1. In a pulverized coal-fired furnace equipped with a plurality of individual burners wherein each of the burners provide a passageway through which a mixture of pulverized coal and primary air passes into the furnace, a method of operating at least one of said burners, comprising:
a. during operation of the furnace at normal loads, discharging the mixture of pulverized coal and primary air passing through said burner into the furnace as a single stream coal-air stream;
b. during operation of the furnace at low loads, splitting the mixture of pulverized coal and primary air discharging from said burner into a first and second coal-air substream;
c. turning at least one of said substreams away from the other so as to establish a divergent angular relationship between said first and second coal-air substreams; and
d. directing said first and second coal-air substreams into the furnace in said divergent angular relationship to each other.

4,434,728
ELECTROMAGNETIC PATTERN SELECTOR FOR AN EMBROIDERY MACHINE

Georg Comploi, Bludenz, Austria; Roland Heimgartner, Arbon, Switzerland; Artur Loacker, Goetzis, Austria; Kurt Huber, Arbon, and Hans Wallimann, Goldach, both of Switzerland, assignors to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

Filed Feb. 2, 1982, Ser. No. 345,080
Claims priority, application Switzerland, Feb. 4, 1981, 731/81
Int. Cl.³ D05C *11/06*
U.S. Cl. 112—84 **9 Claims**



1. A positioning device for a mechanical switching lever arrangement, especially for an embroidery machine, comprising:
a mechanical switching lever arrangement;
a pawl lever selectively movable stepwise between a first end position, an intermediate position and a second end position;
said pawl lever serving for actuating said switching lever arrangement;
electromagnetic means for liberating said pawl lever in order to move between said first end position and said intermediate position; and
mechanical amplifier means for displacing said pawl lever between said intermediate position and said second end position.

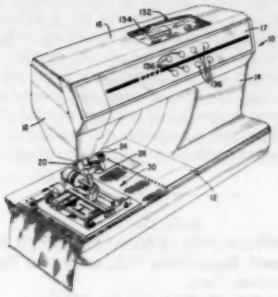
4,434,729
CONTINUOUS MONOGRAMMER

Donald R. Davidson, Berkeley Heights, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 29, 1980, Ser. No. 221,098
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **5 Claims**

1. A work manipulating mechanism for use with a sewing machine having a frame supporting a presser bar, a needle bar, a sewing needle supported on the end of said needle bar, means for supporting said needle bar for endwise reciprocation, actuating means for implementing endwise reciprocation of said needle bar, said frame including a work supporting bed; and an electronic control means for storing signals related to positional coordinates for patterns and monograms, said mechanism comprising:
first means responsive to said signals from said electronic control means for selectively feeding work material in unlimited amount along one axis intermittent generation of stitches; and,

second means responsive to said signals from said electronic control means for selectively moving said first means



along an axis substantially orthogonal to said one axis intermittent generation of said stiches.

4,434,730

MACHINE FOR TOP STITCHING

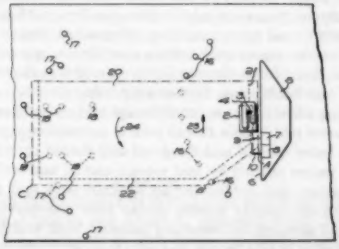
John A. Rose, Knaresborough, and Keith Dyer, Leeds, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Division of Ser. No. 187,396, Sep. 15, 1980, Pat. No. 4,362,115. This application Jan. 7, 1982, Ser. No. 337,568

Claims priority, application United Kingdom, Sep. 14, 1979, 7931892

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **6 Claims**



1. Apparatus for the production in a sheet material of a line of machine stitching having a change of direction therein comprising a sewing machine, means for moving the material through the machine to produce a first portion of stitching line therein, means for sensing and controlling the production of the line of stitching, means for reducing the rate of movement of material through the machine and means for effecting an action on the underside of the material thereby turning the material substantially in its own plane and reducing the friction of the turning material until it is sensed to have reached the change of direction of the stitch line, and means for increasing the rate of movement of material through the machine to the original rate of movement to produce a second portion of stitching line along the changed direction.

4,434,731

ARRANGEMENT FOR SEWING SEPARATE SUCCESSIVE SEAMS ALONG DIFFERENT DIRECTIONS IN A FABRIC MATERIAL

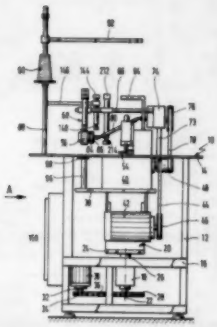
Alfons Beisler, Goldbach, Fed. Rep. of Germany, assignor to Beisler Gesellschaft mit beschrankter Haftung, Goldbach, Fed. Rep. of Germany

Continuation of Ser. No. 190,237, Sep. 24, 1980, Pat. No. 4,318,356. This application Jan. 22, 1982, Ser. No. 341,704

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939238

Int. Cl.³ D05B *3/00*

U.S. Cl. 112—121.14 **30 Claims**



1. An arrangement for sewing seams along n successive edges of a material which extend in different directions, n being an integer not less than two, the arrangement comprising:

a fixedly positioned sewing table defining an opening for supporting the material thereon;

sewing means including first means extending below said table and second means extending above said table, said second means including a sewing needle;

rotatable support means for supporting said sewing means and responsive to a rotation command signal for rotating said sewing means from one selected position to another about a vertical axis of rotation through which said needle extends;

drive means for activating said sewing means to sew a seam in said material with said needle; and

control means for controlling the sewing of said seams along said n successive edges by deactivating said drive means when one seam is finished and thereafter supplying said rotation command signal to cause said sewing means to be rotated until a subsequent edge is aligned with respect to said needle and for reactivating said drive means to cause said sewing means to sew a subsequent seam.

4,434,732

OPERATION CONTROLLER FOR AN ELECTRONIC SEWING MACHINE

Edward A. Salge, Parlin, and Leonard I. Horey, West Orange, both of N.J., assignors to The Singer Company, Stamford, Conn.

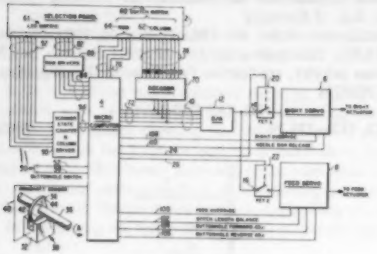
Filed Sep. 15, 1981, Ser. No. 302,290

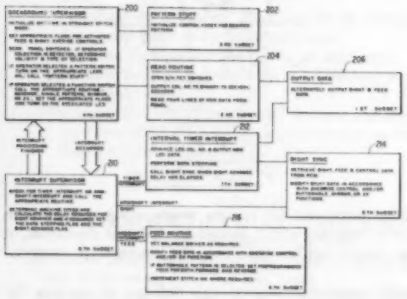
Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **13 Claims**

1. In an electronically controlled sewing machine having sewing instrumentalities for sewing a plurality of different stitch patterns, said sewing machine including a rotatable armshaft, signal means associated with said rotatable armshaft for providing a bight signal and a feed signal in timed relation to said sewing instrumentalities, panel selection means responsive to operator influence for selecting a pattern from said plurality of stitch patterns, and a microcomputer including a memory:

control means including a set of coded instructions that are stored in said memory and executable by said microcomputer for controlling the operation of said sewing machine, said controlling occurring in a first mode of execution of said microcomputer and in a second mode of execution of said microcomputer wherein said first mode of execution is effective continuously except for predetermined interruptions and said second mode of execution is effective only during said predetermined interruptions, said interruptions being effected in response to said bight signal and said feed signal.



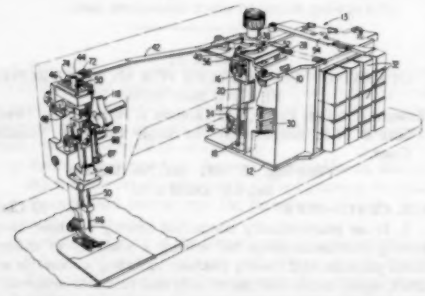


4,434,733

BIGHT AND NEEDLE POSITIONING CONTROL FOR SEWING MACHINES

William Weisz, Tenafly, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 28, 1983, Ser. No. 461,826
Int. Cl.³ D05B 3/02
U.S. Cl. 112—158 A **9 Claims**



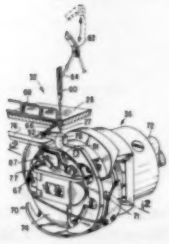
1. Bight controlling and needle positioning mechanism for a sewing machine including a pivoted member; means for predetermining pivotal movement of said member according to a desired pattern to be produced on the machine; linkage means operably connected to the pivoted member for imparting side to side movement to a needle bar; the operable connection between the linkage means and said pivoted member including a pin, and including a slot wherein the pin is adjustable for changing the amplitude of side to side movement of the needle bar in response to movement of the pivoted member, the slot including an enlarged one end portion where the pin may be disposed to disengage the linkage means and pivoted member; means for confining the pin in said enlarged one end portion of the slot to thereby define a particular side position of the needle bar; and means movable by an operator for positioning the pin in said slot.

4,434,734

ANTI-SPILL DEVICE FOR SEWING MACHINE BOBBIN

Angus R. T. Russell, Englishtown, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 18, 1981, Ser. No. 235,467
Int. Cl.³ D05B 57/26
U.S. Cl. 112—181 **4 Claims**



1. A bobbin case device for a looptaker of a sewing machine, said sewing machine supporting an endwise reciprocating needle bar carrying a needle in the end thereof for cooperation with said looptaker in the formation of stitches, said bobbin case device comprising a bobbin case for receiving a thread carrying bobbin with at least one circular flange having a outer face; means support on said bobbin case for tensioning of bobbin thread; means on said bobbin case for establishing a direct bobbin thread patch extending substantially from said tensioning means across said bobbin case device spaced from said outer face of said circular flange of said thread carrying bobbin; said bobbin case further supporting thereon a leaf spring having a first end connected thereto and a second end disposed adjacent said bobbin thread path in pressure engagement with said outer face of said flange of said thread carrying bobbin; and means carried by said second end of said leaf spring for receiving said bobbin thread to form with said establishing means an indirect bobbin thread path responsive to bobbin thread demand for removing pressure from said pressure engagement of said second end with said outer face of said flange whereby bobbin rotation is uninhibited and responsive to absence of bobbin thread demand to release said second end into pressure engagement with said outer face of said flange to inhibit rotation of said bobbin.

4,434,735

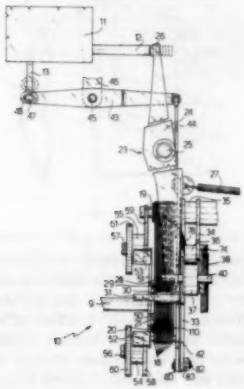
MOTION CONVERSION MECHANISM FOR EFFECTING SEWING MACHINE FEED DOG CONTROL

Nicolo Giolitti, Ivrea, Italy, assignor to Vigorelli Genova S.p.A., Genova-Sestri, Italy

Filed Nov. 12, 1981, Ser. No. 320,658
Claims priority, application Italy, Dec. 9, 1980, 68868 A/80
Int. Cl.³ D05B 69/02
U.S. Cl. 112—220 **17 Claims**

1. A sewing machine (1) comprising a motion conversion

mechanism (10) which receives movement signals generated by a decoder unit (11) situated in said machine (1), and is provided with a first element (12) arranged to assume a plurality of working positions, and a second element (13) arranged to assume a first or a second working position, said mechanism (10) being arranged to convert said movement signals into movement of a dog (7) for feeding the fabric (130) in such a manner as to cause said fabric (130) to undergo a movement, the extent of which depends on which position has been assumed by said first element (12), and which is in either a forward or backward direction depending upon whether said first or second working position has been assumed by said second element (13), characterized in that said motion conversion mechanism (10) comprises:



a plurality of levers (18) equal in number to the number of said plurality of working positions which can be assumed by said first element (12), each lever (18) being arranged to assume a rest position or a working position;

a selector unit (23) controlled by said first element (12) and arranged to select one of said levers (18) and to move said selected lever (18) into said working position;

a member (50) angularly coupled to a control shaft (9) for said dog (7) and arranged to be prepositioned in a predetermined angular position by said selected lever (18); and

a dragging element (42) controlled by said second element (13) of said decoder unit (11) and arranged to engage said member (50) in such a manner as to move this latter from said predetermined angular position towards an angular reference position.

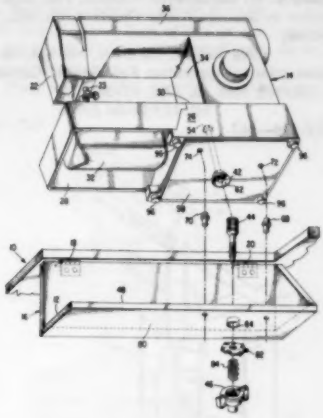
4,434,736

STRAIN CONTROLLED SEWING MACHINE MOUNT

Jan Szostak, Lincroft, and Albert L. Newman, West Orange, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jan. 17, 1983, Ser. No. 458,425
Int. Cl.³ D05B 75/00
U.S. Cl. 112—258 **7 Claims**

1. In combination, a sewing machine including a frame with a depending threaded stud attached thereto; a platform with a top surface upon which the machine is supportable in a sewing machine cabinet; a second stud detachably secured to the first mentioned stud and extending through a hole in the platform, said second stud including a threaded portion which projects beyond the bottom surface of the platform; a wing nut on the threaded portion of the second stud; a coil spring on the second stud compressed by the wing nut; and a washer on the second stud forced against the bottom surface of the platform by the spring, the washer including upwardly extending prongs which dig into the platform to prevent the washer from turning, the washer also including downwardly extending prongs engageable with the wing nut for limiting the extent to which



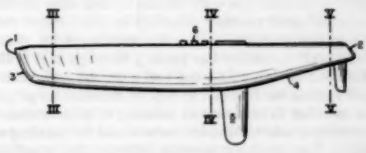
the wing nut can be tightened on the second stud as the wing nut is turned to affix the sewing machine to the platform.

4,434,737

DISPLACEMENT, PLANING SAILBOARD

John Weiss, West Babylon, N.Y., assignor to Wind Innovations, Inc., Cutchogue, N.Y.

Filed Sep. 16, 1981, Ser. No. 302,830
Int. Cl.³ B63B 1/16, 1/04
U.S. Cl. 114—39 **5 Claims**



1. A hull for a sailboard, of a length exceeding 6 times its maximum beam, equipped with mast sockets, centerboard slot, and skeg and having an improved shape for use as a displacement-type hull in light winds and as a planing-type hull in strong winds, comprising:

a forward portion having a deep forefoot, a fine entry and a shape suitable for easy forward movement through water at low speed;

a middle portion of substantially round underwater cross-section;

an aft portion of flat bottom terminating at a wide stern and merging into said middle portion;

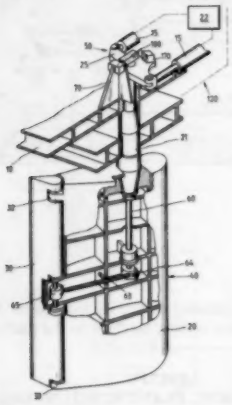
a longitudinal profile having not more than a small rise between said middle portion and the forefoot profile curve and having a substantial rise, between said midportion and said stern, which is at least four times the rise between said middle portion and said forefoot profile curve, so that a long substantially flat bottom area is provided for said aft portion which comes closer to the deck surface towards the stern,

whereby a forward weight shift of the sailor enables selection of an efficient displacement-type behavior of the hull and, in the event of sufficient wind force, an aft weight shift of the sailor enables selection of an efficient planing behavior.

4,434,738
RUDDER FOR WATERCRAFT

Wolfgang K. W. Barkemeyer, Reinbek, Fed. Rep. of Germany, assignor to Jastram-Werke GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,924
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101042; Nov. 20, 1981, 8133822[U]
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—162 **5 Claims**



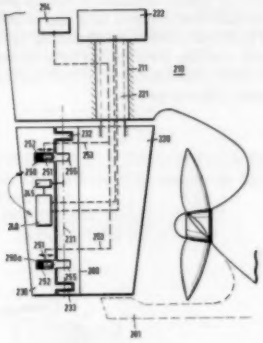
1. A rudder for a watercraft comprising a main rudder member; a hollow rudder shaft adapted to attach said main rudder member to a watercraft for pivotal movement of said main rudder member about a vertical axis with respect to the watercraft; a fin member; means for attaching said fin member to said main rudder member for pivotal movement of said fin member about a vertical axis with respect to said main rudder member; a pivotal yoke member attached to said hollow rudder shaft; means for pivoting said yoke member with respect to the watercraft; a torsion bar passing through said hollow rudder shaft and having a first end and a second end; means coupling said torsion bar first end to said fin member for pivoting of said fin member in response to twisting of said torsion bar; means coupled to said torsion bar second end for twisting said torsion bar; a first blocking member adapted for attachment to the watercraft; a second blocking member attached to said yoke member; and a locking member movable between a first locking position, in which said torsion bar is locked to said first blocking member permitting pivoting of said fin member with respect to said main rudder member, and a second locking position, in which said torsion bar is locked to said second blocking member preventing pivoting of said fin member with respect to said main rudder member.

4,434,739
FIN RUDDER FOR SHIPS

Joachim Brix, Hamburg, and Friedrich Weiss, Ahrensburg, both of Fed. Rep. of Germany, assignors to Jastram-Werke GmbH KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 100,545, Dec. 5, 1979, Pat. No. 4,342,275, which is a continuation of Ser. No. 860,605, Dec. 14, 1977, abandoned. This application Mar. 30, 1982, Ser. No. 363,489
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656738; Nov. 11, 1977, 2750437
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—162 **7 Claims**

1. A rudder assembly for marine craft comprising: a main rudder member pivotally coupled to said marine craft for deflection relative thereto; a fin member pivotally coupled to said main rudder member for deflection relative thereto; and an actuating and control system comprising first control means operative to effect deflection of said main rudder member relative to said marine craft and second control means operative to effect deflection of said fin member relative to said main rudder member; said first control means being capable of effecting deflection of said main rudder member relative to said marine craft independently of said second control means; said

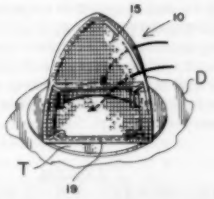


second control means being effective to effect deflection of said fin member relative to said main rudder member independently of said first control means, said first and second control means being operative, respectively, to effect deflection of said main rudder member and said fin member simultaneously to enable simultaneous and independent control of said main rudder member and said fin member during normal operation of said rudder assembly.

4,434,740
WIND-SCOOP FOR SMALL BOATS

John M. Childs, 13031 Deva St., Coral Gables, Fla. 33156

Filed May 5, 1983, Ser. No. 491,802
Int. Cl.³ B63B *19/06*; B63J *2/02*
U.S. Cl. 114—211 **4 Claims**



1. A collapsible wind-scoop for releasable attachment over a through opening in the deck of a small boat comprising, in combination, a resilient framework of symmetrical dome-shaped configuration, said framework having an apex at the upper end thereof and a base portion at the lower end thereof, a flexible cover member shaped to fit over and confirm with said resilient framework, between said upper and lower ends thereof, one half-section of said cover member defined by a plane including the axis of symmetry of said resilient framework and being not air permeable and the other half-section being air permeable, and means at the lower end of said dome-shaped framework for releasable attachment with respect to marginal edge portions of a boat deck opening, said resilient framework comprising a pair of bent wire members substantially symmetrical about an axis of generation and crossing at their apices, and means for releasably inter-securing said bent

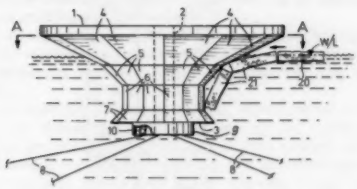
wire members at their apices, said releasable attachment means comprising radially outwardly open hook portions bent in the ends of said wire members.

4,434,741

ARCTIC BARGE DRILLING UNIT

Brian D. Wright; Raymond A. McBeth, both of Calgary, Canada, and Egon Wessels, Hamburg, Fed. Rep. of Germany, assignors to Gulf Canada Limited, Toronto

Filed Mar. 22, 1982, Ser. No. 360,252
Int. Cl.³ B63B *35/08*; E02B *15/02*
U.S. Cl. 114—264 4 Claims



1. In a marine drilling unit of the floating barge type, with draft no greater than 20 meters for operation in ice-covered water, having a working deck to accommodate drilling equipment, a marine hull to support said deck, a central moonpool penetrating the deck and hull to accommodate a marine drill-pipe, and mooring lines attached at their top to said unit via the bottom of said hull and at their bottoms to anchors surrounding said unit at some distance, the improvements which comprise:

(i) a hull having

(a) a substantially circular polygonal perimeter in plan view,

(b) a matching first polygonal wall substantially in the form of an apexdown truncated cone extending from below the deck, at an angle to the horizontal of from substantially 20 degrees to substantially 55 degrees, to a level at least below the normal bottom level of ice impinging against the hull,

(c) a second matching polygonal wall substantially in the form of an apexdown truncated cone extending from and below said first wall, at an angle to the horizontal from at least as great as the angle of the first polygonal wall to substantially 65 degrees, to a level below the bottom of the first by a distance at least as great as the thickness of ice impinging against the hull,

(d) a matching third polygonal wall substantially in the form of a cylinder extending substantially vertically from and below said second wall for a distance at least as great as the normal thickness of ice impinging against the hull,

(e) a matching polygonal deflector wall substantially in the form of an apex-up truncated cone extending from and below said third wall, at an angle to the horizontal of from substantially 20 degrees to substantially 65 degrees, to a level below the bottom of said third wall by a distance at least as great as the normal thickness of ice impinging against the hull, and

(f) a substantially flat annular bottom closing said deflector wall surrounding said moonpool; and

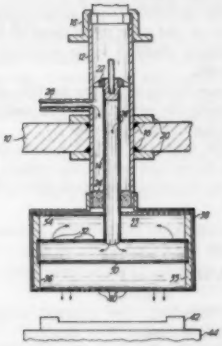
(ii) a substantially circular guard member secured to the flat bottom of said hull, surrounding the points at which the mooring lines achieve their closest proximity to the bottom of the hull, and extending below the flat bottom of the hull for a distance to place the lowest edge of said member at a depth below the water surface at least five times the normal thickness of ice impinging against the hull and not greater than 20 meters.

4,434,742

INSTALLATION FOR DEPOSITING THIN LAYERS IN THE REACTIVE VAPOR PHASE

Louis Henaff; Michel Morel, both of Pen an Alle, and Jean L. Favennec, 16, cite du Vallon - St. Quay Perros, all of 22700 Perros-Guirec, France

Filed Sep. 22, 1982, Ser. No. 421,434
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—723 3 Claims



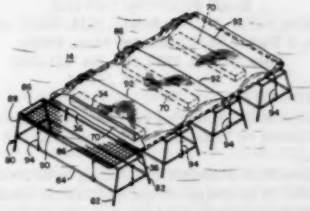
1. An installation for the deposition of thin layers in reactive vapour phase, comprising a tightly sealed enclosure, means for introducing into the enclosure a gas having an appropriate composition, means for introducing into the same enclosure a high frequency field able to form a plasma, and a sample holder, the gas and high frequency introduction means being brought together in a head comprising a coaxial conductor able to propagate the high frequency field, said conductor entering the enclosure by a tight passage and being constituted by an outer sheath and a hollow inner core connected to gas supply means, further comprising a chamber constituted by a cylinder having openings along one generatrix, said cylinder being closed by two end covers, the core being linked with the chamber by a gas distribution tube located within the cylinder, the outer sheath of the conductor being connected to a metal skirt surrounding the chamber, whilst the sample holder is positioned beneath the row of openings, and wherein means are provided to permit a relative displacement of the sample holder with respect to the head in a direction perpendicular to the row of openings.

4,434,743

SHELLFISH MARICULTURE APPARATUS

William F. Nickel, R.F.D. 1 Box 262, Melfa, Va. 23410

Continuation-in-part of Ser. No. 208,464, Nov. 19, 1980, Pat. No. 4,328,764. This application May 10, 1982, Ser. No. 376,652
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—4 12 Claims



1. A shellfish mariculture apparatus for nurturing clams,

oysters, scallops and the like from an infantile seed stage to commercial maturity, said apparatus comprising:

frame means operable to be positioned within an aquatic environment;

envelope means positioned upon said frame means and being generally coextensive therewith for enhousing shellfish during a nurturing period, said envelope means including a sleeve of open mesh material operable to be laid laterally upon said frame means and having a lower portion supported by said frame means,

said sleeve being operably closed at the ends thereof and the interstices of said open mesh material being smaller than the infantile shellfish to be nurtured within said envelope means;

means operably contacting an upper portion of said sleeve means for elevating the upper portion of said sleeve means above a lower portion thereof; and

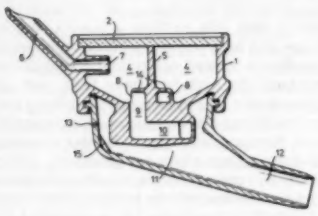
means positionable upon the bed of a body of water and being operable to receive said frame means and support said frame means and envelope means above the bed of the body of water.

4,434,744

METHODS OF AND/OR APPARATUS FOR MILKING ANIMALS

Thomas D. Millar, Hamilton, New Zealand, assignor to AHI Operations Limited, Manukau, New Zealand

Filed Apr. 19, 1982, Ser. No. 369,570
Int. Cl.³ A01J 5/04
U.S. Cl. 119—14.02 **16 Claims**



15. A method for minimizing backflow of fluid in a milking claw having a claw body including a common chamber for receiving milk from a cluster of teat cups and a plurality of milk-receiving chambers interposed between said teat cups and said common chamber for receiving milk from said teat cups and distributing received milk to said common chamber, said method comprising creating a vortex in the fluid within said common chamber sufficient to counteract back pressure on the fluid within the common chamber exerted by the presence of a pressure differential between the claw body and at least one of the teat cups.

4,434,745

BIRD FEEDING DEVICE

Noel Perkins, R.F.D. #1, Northwood, N.H. 03261, and Thomas Perkins, 5 Tucker St., Gloucester, Mass. 01930

Filed Sep. 30, 1982, Ser. No. 431,315
Int. Cl.³ A01K 5/00
U.S. Cl. 119—51 R **11 Claims**

8. An apparatus for holding bird food, such as seed, which can be accessed by birds, and not by squirrels, said apparatus comprising:

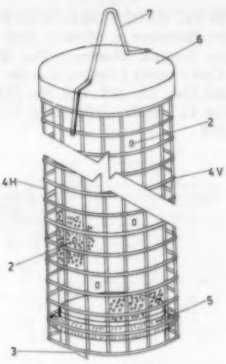
(a) a cylindrical container for holding birds food having a plurality of spaced apart openings therein through which birds may access the bird food;

(b) a wire mesh enclosing said container, said mesh

(i) preventing access of the container by squirrels,

(ii) permitting the birds to access the opening in the container, and

(iii) providing a perch for the birds accessing the openings in the container; and



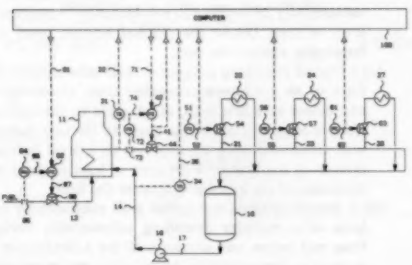
(c) means for supporting said container within said wire mesh and for spacing said wire mesh away from said container such that said wire mesh is not directly in contact with the container whereby squirrels are prevented from accessing the container.

4,434,746

CONTROL OF A SYSTEM FOR SUPPLYING HEAT

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1983, Ser. No. 472,398
Int. Cl.³ F22B 37/42
U.S. Cl. 122—448 R **16 Claims**



1. Apparatus comprising:

a heater;

means for passing a fluid stream through said heater;

means for supplying a fuel to said heater, wherein the combustion of said fuel in a combustion zone in said heater supplies heat to said fluid stream;

a first control valve operably located so as to manipulate the total flow of the effluent stream from said heater;

a second control valve operably located so as to manipulate the flow of a first portion of said effluent stream to a first process, wherein said first portion of said effluent stream flowing through said second control valve supplies heat to said first process;

a third control valve operably located so as to manipulate the flow of a second portion of said effluent stream to a second process, wherein said second portion of said effluent stream flowing through said third control valve supplies heat to said second process;

means for establishing a first signal representative of the position of said first control valve;

means for establishing a second signal representative of the position of said second control valve;

means for establishing a third signal representative of the position of said third control valve;

a first high select means;

means for providing said first signal, said second signal and said third signal to said first high select means, wherein said first high select means establishes a fourth signal representative of the one of said first, second and third signals which is representative of the most open valve position;

means for establishing a fifth signal representative of the maximum desired open position for any one of said first, second and third control valves;

means for comparing said fourth signal and said fifth signal and for establishing a sixth signal which is responsive to the difference between said fourth signal and said fifth signal;

means for establishing a seventh signal, representative of the flow rate of said fuel required to maintain the position of at least one of said first, second and third control valves substantially equal to the maximum desired valve opening represented by said fifth signal, in response to said sixth signal;

means for manipulating the flow rate of said fuel to said heater in response to said seventh signal;

means for establishing an eighth signal representative of the total heat required by said first and second processes plus any desired reserve heat;

means for establishing a ninth signal, representative of the flow rate of said effluent stream through said first control valve required to provide the total heat represented by said eighth signal, in response to said eighth signal; and

means for manipulating said first control valve in response to said ninth signal.

4,434,747

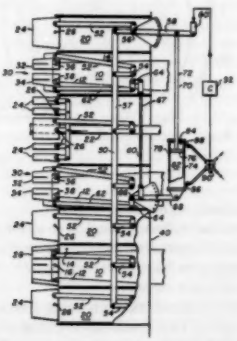
BURNER-TILT DRIVE APPARATUS FOR A PULVERIZED COAL FIRED STEAM GENERATOR

Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 1, 1982, Ser. No. 393,288

Int. Cl.[3] **F22B** *37/42;* **F22D** *5/00*

U.S. Cl. 122—449 **1 Claim**



1. In a pulverized coal-fired steam generator having a generally vertical furnace and a plurality of fuel-air admission assemblies arrayed in a vertical windbox in at least one wall of the furnace for introducing coal and air into the furnace, at least one of said fuel-air admission assemblies being a low load fuel-air admission assembly having a split coal bucket having vertically adjustable upper and lower coal nozzles, the remaining fuel-air admission assemblies having vertically adjustable single nozzle coal buckets; an apparatus for adjusting the vertical orientation of the upper and lower coal nozzles of said low load fuel-air admission assembly and the single nozzle coal buckets of the remaining fuel-air admission assemblies comprising:

a. first tilt linkage means interconnecting the upper coal nozzles of each low load fuel-air admission assembly disposed in said windbox and each single nozzle coal bucket disposed in said windbox;

b. second tilt linkage means interconnecting the lower coal nozzles of each low load fuel-air admission assembly disposed in said windbox;

c. link bar means interconnected between said first tilt linkage means and said second tilt linkage means, said link bar means being of selectively adjustable length;

d. a pneumatic cylinder having an axially movable piston enclosed in an axially elongated cylindrical housing interdisposed in said link bar means between said first and second tilt linkage means, the piston dividing the interior of said cylindrical housing into a first chamber on one side of the piston and a second chamber on the opposite side of the piston;

e. first conduit means in fluid communication with the first chamber through which pneumatic fluid may be supplied to and vented from the first chamber; and

f. second conduit means in fluid communication with the second chamber through which pneumatic fluid may be supplied to and vented from the second chamber;

g. a first tilt actuation means for actuating said first tilt linkage means so as to tilt the upper coal nozzle of said low load fuel-air admission assemblies in unison with the single nozzle coal buckets of the remaining fuel-air admission assemblies; and

h. a second tilt actuation means comprising control valve means operatively associated with said first and second conduit means for selectively controlling the piston pneumatic fluid flow between the first and second chambers so as to cause the piston to be displaced axially within said cylindrical housing thereby lengthening or shortening said link bar means interconnecting said first tilt linkage means with said second tilt linkage means.

4,434,748

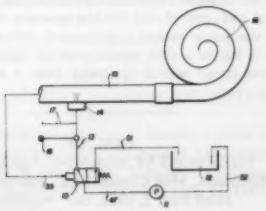
WATER INJECTION CONTROL VALVE

Bernard C. Smelser, 12812 New Windsor Rd., Union Bridge, Md. 21791

Filed Apr. 27, 1982, Ser. No. 372,303

Int. Cl.[3] **F02M** *25/02;* **F02D** *19/00*

U.S. Cl. 123—25 L **5 Claims**



1. In a water admission system for a combustion engine having a fuel charge induction passage subject to pressure variations as a result of engine demand variations, a water delivery valve means including a driver connected with said induction passage, and cooperative water delivery means coupled to the valve means and including a connection with the induction passage and operable to deliver varying amounts of water from a reservoir to the induction passage in response to varying engine demand for fuel through the induction passage,

said valve means further comprising a three-way valve including a water inlet passage, a bypass passage, and a water delivery passage communicating with said water delivery means, a biased shiftable valve element normally blocking communication between the water inlet and delivery passages and establishing communication between the water inlet and bypass passages, said water delivery means including delivery nozzle means connected in said induction passage, the water delivery passage being in communication with said delivery nozzle, and said driver comprising a pressure responsive element in a chamber of said valve connected with said induction passage and acting directly on the shiftable valve element to move it against a biasing force for such element varying distances as engine demand varies.

4,434,749

COOLING SYSTEM FOR LIQUID-COOLED INTERNAL COMBUSTION ENGINES

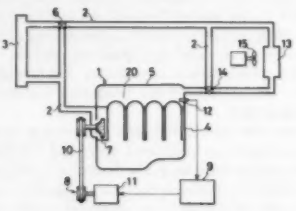
Yasuyuki Morita; Katsuhiko Yokooku; Hideo Shiraishi, and Masahiko Matsuura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 24, 1982, Ser. No. 361,340

Claims priority, application Japan, Mar. 25, 1981, 56-44471; Mar. 27, 1981, 56-45740

Int. Cl.³ F01P *7/16*

U.S. Cl. 123—41.02 **6 Claims**



1. A cooling system for a liquid-cooled internal combustion engine comprising cooling liquid passage means having cooling liquid jacket means provided in the engine for passing cooling liquid therethrough, cooling liquid pump means provided in said passage means for circulating the cooling liquid through said passage means and said jacket means, electrically operated driving motor means for driving said pump means so that the total amount of the cooling liquid circulated through the passage means and the jacket means is pumped by said pump means, engine temperature sensing means for sensing engine temperature and producing an engine temperature signal, control means adapted to receive the engine temperature signal and control said driving means so that the operating speed of the pump means is decreased, when the engine temperature is below a first predetermined value, to a predetermined low speed which is lower than a normal operating speed.

4,434,750

THERMOSTAT HOUSING ASSEMBLY

Karl R. Edelmann, 1468 Chestnut La., Rochester, Mich. 48063

Filed Aug. 2, 1982, Ser. No. 404,463

Int. Cl.³ F01P *7/16*

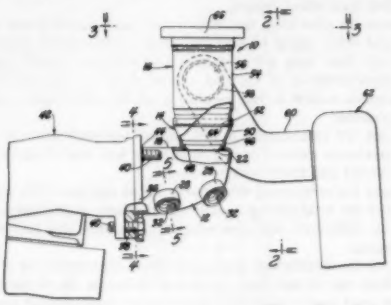
U.S. Cl. 123—41.02 **13 Claims**

1. A thermostat housing assembly comprising:

a base member including a hollow tubular portion having a longitudinal axis and a first end opening disposed substantially on said axis and a second end opening offset from said axis at a predetermined angle;

an intermediate member including a body portion and a first end portion in mating engagement with and connected to said second opening so that said intermediate member is disposed at said predetermined angle in relation to said longitudinal axis of said base member, said intermediate member further including a second end portion; and

a top stack member including a hollow cylindrical portion having a port therethrough between the ends thereof and a cylindrical extension secured thereto about said port,



said top stack member including a first tapered end portion seated within and connected to said second end portion of said intermediate member so that said cylindrical extension extends from said top stack member at a second predetermined angle in relation to said axis of said base member.

4,434,751

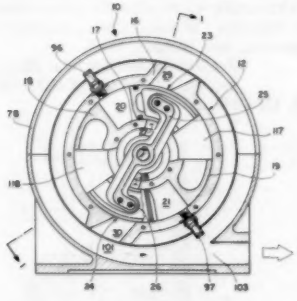
ROTARY PISTON ENGINE

Ivan Pavicic, 28 Glenn Ct., East Rutherford, N.J. 07073

Filed Dec. 23, 1981, Ser. No. 333,801

Int. Cl.³ F02B *57/06*

U.S. Cl. 123—43 B **10 Claims**



1. A rotary piston engine comprising:

a rotatable annular cylinder coupled to a first shaft for rotation about the longitudinal axis of the engine, said annular cylinder having at least two combustion chambers with inlet and exit ports respectively;

at least two piston elements, each being slidably mounted in a separate one of said combustion chambers;

a connecting rod mounted upon a second shaft coaxial to said first shaft for concentric rotation about said longitudinal axis, said connecting rod having opposite ends affixed to each of said piston elements for rotating the piston elements conjointly with rotation of said second shaft;

a third shaft supported for rotation about a main axis eccentrically displaced a predetermined distance from the longitudinal axis of the engine; and

linkage means for controlling oscillatory motion between

said piston elements and said rotating annular cylinder, said linkage means comprising:

a cross connecting arm transversely mounted upon said third shaft;

a first cross arm integral with said first shaft;

a second cross arm integral with said second shaft, with said first and second cross arms being mounted in common on one side of said cross connecting arm; and

means for linking one end of said cross connecting arm to said first cross arm and the opposite end of said cross connecting arm to said second cross arms such that said first and second cross arm will angularly rotate relative to one another during each revolution of the annular cylinder with a maximum angular displacement therebetween of less than 180 degrees.

4,434,752

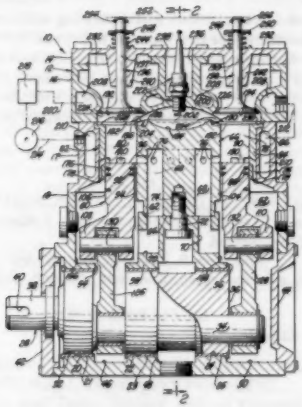
INTERNAL COMBUSTION ENGINE

William V. Bachmann, 22517 Ten Mile Rd., St. Clair Shores, Mich. 48080

Filed Jul. 6, 1981, Ser. No. 280,340

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—50 B **75 Claims**



1. An internal combustion engine, comprising an engine housing, an annular cylinder formed in said housing, said annular cylinder comprising a first radially inner annular wall and a second radially outer annular wall, a stationary axial end surface means operatively joined to said first radially inner annular wall, a ring-like piston received in said annular cylinder for reciprocating movement therein, motion transmitting means operatively connected to said ring-like piston for transmitting the reciprocating movement of said ring-like piston to associated power output means, work combustion chamber means, said work combustion chamber means comprising a first ring-like work combustion chamber defined generally and cooperatively by said inner and outer annular walls and said piston, said work combustion chamber means further comprising a second work combustion chamber situated generally axially of said first ring-like work combustion chamber, said first and second work combustion chambers being in continuous open communication with each other and effective for receiving a combustible mixture therein, said ring-like piston when moving in a direction toward its top-dead-center position being effective for simultaneously compressing said combustible mixture within both of said first and second work combustion chambers, said second work combustion chamber being of unexpandable volume and in part defined by said stationary axial end surface means, means for initiating ignition of said combustible mixture first within said second work combustion chamber and only thereafter causing ignition of said combustible mixture to travel from said second work combustion chamber to within said first work combustion chamber to thereby through such combustion and expansion of said combustible mixture collectively within both said first and second work combustion chambers produce a work pressure against said ring-like piston in order to move said ring-like piston toward its bottom-dead-center, and annular passage means generally peripherally about said second work combustion chamber for completing said continuous communication, wherein said annular passage means is peripherally continuous about said second work combustion chamber, wherein said radially inner annular wall is fixedly supported by a bearing riser portion to said engine housing.

4,434,753

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

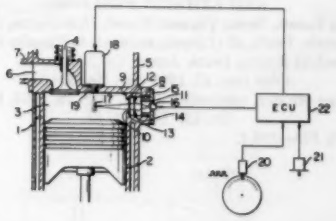
Shinichi Mukainakano; Tadashi Hattori; Minoru Nishida, all of Okazaki; Toru Mizuno, Aichi, and Tukasa Goto, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed May 17, 1982, Ser. No. 378,717

Claims priority, application Japan, May 18, 1981, 56-75325; Oct. 29, 1981, 56-173934

Int. Cl.³ F02B *45/08, 23/00;* **F02P** *23/04, 1/00*

U.S. Cl. 123—143 B **13 Claims**



1. An ignition apparatus for an internal combustion engine having a combustion chamber, comprising:

means for supplying a mixture of air and fuel into said combustion chamber,

means having an end thereof opening into said combustion chamber for supplying minute particles of a material which is not the fuel and has a high light absorption factor, and

means for radiating a light beam toward a suitably selected position in the internal space of said combustion chamber so that the light beam can strike said minute particles of high light absorption factor supplied from said particle supplying means.

4,434,754

METHOD OF ON SITE CHARGING OF DISTRIBUTOR MAGNET

David H. Fox, Ann Arbor; Charles C. Kostan, Canton Township, Plymouth County, and Frank B. Casaceli, Mt. Clemens, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01168, § 371 Date Aug. 27, 1982, § 102(e) Date Aug. 27, 1982

PCT Filed Aug. 27, 1982, Ser. No. 432,887

Int. Cl.³ F02P *7/00;* **H02K** *11/00*

U.S. Cl. 123—146.5 A **8 Claims**

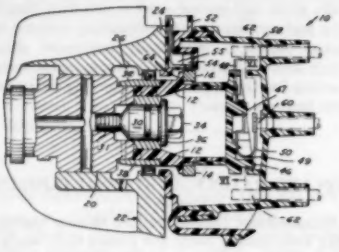
1. A method for orienting a distributor on an internal combustion engine so as to produce an electrical signal in synchronism with the periodic movement of an engine part, said method comprising the stesp of:

coupling a magnetizable material to the camshaft of the internal combustion engine;

establishing a sensor reference point on the engine, said

reference point being stationary with respect to the engine block;

positioning the pistons of the engine and the coupled magnetizable material in a known position, with respect to said reference point; and



inducing magnetic poles in said magnetizable material so that said magnetic poles have a known rotational relationship to said reference point.

4,434,755

MOTORCYCLE WITH CLOSEABLE ENGINE INTAKE AND EXHAUST PASSAGES

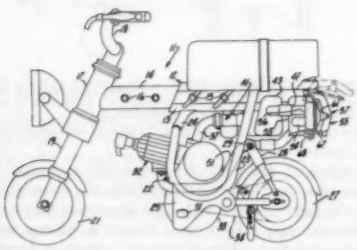
Hisashi Kazuta, Iwata; Yasunari Kawai, Hamamatsu, and Naoki Tsuchida, Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 17, 1981, Ser. No. 331,634

Claims priority, application Japan, Dec. 26, 1980, 55-189084

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—195 C **6 Claims**



1. In a motorcycle or the like having an internal combustion engine having a combustion chamber, an induction system for said engine having a charge forming device for delivering a fuel air charge to said combustion chamber and an air inlet upstream of said charge forming device, and an exhaust system leading from said combustion chamber and terminating in an outlet that communicates with the atmosphere, the improvement comprising valve means contiguous to said inlet and said outlet for closing the communication of said induction system and said exhaust system with the atmosphere.

4,434,756

ARRANGEMENT FOR BEARING OF A CRANKSHAFT

Ralph L. Nilsson, Hindas, and Bo R. Rangert, Mölnlycke, both of Sweden, assignors to EMAB Electrolux Motor Aktiebolag, Huskvarna, Sweden

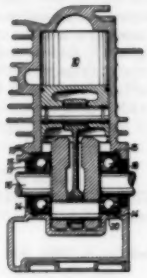
Filed May 24, 1982, Ser. No. 381,737

Claims priority, application Sweden, Jun. 16, 1981, 8103766

Int. Cl.³ F16C *27/00*

U.S. Cl. 123—195 R **9 Claims**

1. An engine having a cylinder defining the upper portion of a crankcase, a piston reciprocably positioned in the cylinder and coupled to a crankshaft, a separate plastic crankcase lower portion, means for mounting said lower portion below said upper portion, and bearings for the crankshaft held between the upper and lower portions of the crankcase, and sleeve members of high temperature resistant plastic material over said bearings, sandwiched between said bearings and said



upper and lower portions and separating said bearings from said upper and lower portions, said upper and lower crankcase portions having bearing seats for receiving said sleeve members, said mounting means pressing said sleeve members into said bearing seats, said sleeve members extending from said bearings to completely separate said crankcase portions.

4,434,757

ROTARY PISTON INTERNAL COMBUSTION ENGINE

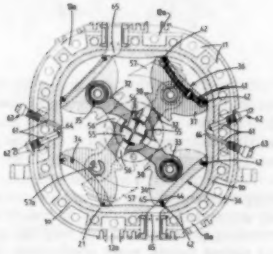
Hamilton Walker, 46 Whytehead Crescent, Kohimarama, Auckland, New Zealand

Filed Sep. 9, 1980, Ser. No. 185,408

Claims priority, application New Zealand, Sep. 12, 1979, 191548

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—241 **20 Claims**



1. A rotary internal combustion engine comprising a stator having an enclosed chamber, said chamber being defined by a pair of opposing side walls and a peripheral wall extending therebetween, a rotor disposed within the chamber and mounted for rotation by a shaft extending between said side walls, said rotor including at least one arm projecting radially from said shaft and a rotator member pivotally mounted on the end of said arm by a pivot pin, said rotator member having a working surface which spans between said side walls and has leading and trailing surfaces in contact with said peripheral wall thereby defining a combustion chamber, an air inlet for introducing air into said chamber, the pivot pin being hollow, and air ducting means communicating between the interior of the chamber outside the rotator member, and the hollow interior of the pivot pin, to permit air supplied to said chamber

from said inlet to be ducted to the hollow interior of the pivot pin.

4,434,758

DIESEL ENGINE

Gerhard Grammes, Meddersheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1983, Ser. No. 480,714

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 8209819[U]

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—286 **4 Claims**

1. A diesel engine having a cylinder with a closed end defining a plane, a piston in the cylinder having a portion facing the closed end and defining therewith a main combustion chamber, a turbulence chamber having a closest side adjacent but spaced longitudinally beyond the cylinder, a transfer port connecting the main combustion chamber with said closest side of the turbulence chamber through the cylinder closed end and forming an acute port entry angle with said plane, said transfer port having a lens-like cross section, as in a plano-convex lens having opposite convex and flat sides with rounded-off edges, characterized in that the convex side is disposed inwardly toward the center of the cylinder and the flat side is disposed outwardly away from the center of the cylinder, the transfer port has a cross-sectional area of not more than 1% nor less than 0.7% of the cross-sectional area of the cylinder and said port entry angle has a value of not less than 37° nor more than 44°.

4,434,759

FUEL SUPPLY CUT CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

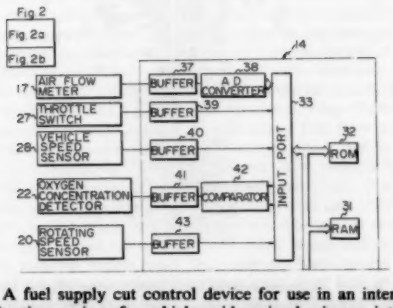
Isamu Iezuka, and Kazuo Nakano, both of Okazaki, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1982, Ser. No. 427,297

Claims priority, application Japan, Mar. 24, 1982, 57-45534

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—325 **5 Claims**



1. A fuel supply cut control device for use in an internal combustion engine of a vehicle, said engine having an intake passage, a throttle valve arranged in the intake passage, and fuel supply means for feeding fuel into the intake passage, said device comprising:

first means actuated in response to a change in the degree of opening of the throttle valve and producing an output signal indicating that the throttle valve is in the idling position;

second means detecting the engine speed and producing an output signal indicating the engine speed;

third means detecting the vehicle speed and producing an output signal indicating the vehicle speed; and

control means actuating said fuel supply means in response to the output signals of said first means, said second means and said third means for stopping the supply of fuel from said fuel supply means when the throttle valve is closed to the idling position under an operating state where the engine speed is higher than a predetermined cut speed and for starting the supply of fuel from said fuel supply means when the engine speed is reduced below a predetermined resume speed, said cut speed and said resume speed being changed in accordance with the vehicle speed.

4,434,760

APPARATUS FOR CONTROLLING THE IDLING SPEED OF AN ENGINE

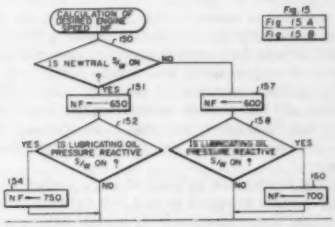
Nobuyuki Kobayashi, Toyota, and Hiroshi Itoh, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 292,534, Aug. 13, 1981, Pat. No. 4,364,350. This application Nov. 10, 1982, Ser. No. 440,523

Claims priority, application Japan, Jan. 23, 1981, 56-8142; Jan. 26, 1981, 56-8143; Jan. 26, 1981, 56-8937

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **12 Claims**



1. Apparatus for controlling the idling speed of an engine including a main intake passage and a throttle valve arranged in said main intake passage, said apparatus comprising:

a bypass passage having a first end connected to said main intake passage upstream of said throttle valve and a second end connected to said main intake passage downstream of said throttle valve;

a control valve arranged in said bypass passage;

a step motor actuating said control valve for controlling air flowing within said bypass passage;

means for detecting the speed of said engine during idling;

means for detecting the pressure of lubricating oil in said engine;

means for detecting the temperature of coolant in said engine; and

control means, responsive to said speed detecting means, said pressure detecting means and said temperature detecting means, for: (1) controlling the position of said step motor so that the idling speed of said engine becomes equal to a predetermined base speed when said lubricating oil pressure is higher than a predetermined pressure and when said coolant temperature is lower than a first predetermined temperature, (2) rotating said step motor so that control valve increases the flow area of said bypass passage to cause the idling speed of said engine to approach a predetermined pressure control speed which is higher than said predetermined base speed when said lubricating oil pressure becomes lower than said predetermined pressure, and (3) rotating said step motor so that the idling speed of said engine approaches a predetermined tempera-

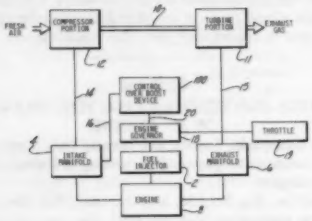
ture control speed when said coolant temperature becomes higher than said first predetermined temperature.

4,434,761

FUEL FLOW REGULATOR CONTROL FOR A DIESEL ENGINE WITH EXHAUST GAS DRIVEN TURBOCHARGER

George C. Ludwig, Marion, S.C., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Filed Jan. 2, 1981, Ser. No. 222,098
Int. Cl.³ F02D 1/06
U.S. Cl. 123—383 8 Claims



1. A fuel flow regulating device for internal combustion engines having intake manifold means, turbocharging means, connected to said intake manifold means, for increasing pressure in said intake manifold means, fuel control means, mounted adjacent to said intake manifold means and operatively connected to internal combustion engine, for regulating fuel flow to said internal combustion engine, governor means, connected to said fuel control means in response to a signal responsive to engine speed and engine power and operator actuating means, connected to said fuel control means, for controlling said fuel control means from first fuel flow rate to a second fuel flow rate in response to an operator signal and intake manifold pressure, said fuel flow regulating device comprising:

a housing having first cylindrical body portion and second body portion mounted to said first cylindrical body portion, said first cylindrical body portion having one end, an opposite end and portions defining a cylindrical passage extending from said one end toward said opposite end, said opposite end having a web portion extending across said cylindrical passage, said web portion having a portion defining an opening centrally disposed with said cylindrical passage for flow communication therebetween, said second body portion having one end, an opposite end and portions defining a first passage extending from said one end towards said opposite end, said first passage including a first opening through said opposite end, a first counterbore adjacent to said first opening and centrally disposed therewith, a second counterbore adjacent to said first counterbore and centrally disposed therewith, said first counterbore further being larger than said first opening and interposed said first opening and said second counterbore, said second counterbore further being larger than said first counterbore and extending from said one end to said second counterbore, said housing further having portions defining a first channel extending from said cylindrical passage in said first cylindrical body portion to said second counterbore in said second body portion for flow communication therebetween, and a second channel extending from said cylindrical passage in said first cylindrical body portion to said first counterbore in said second body portion;

a conduit connecting said intake manifold means to said first counterbore for flow communication therebetween;

slide valve means, slidably mounted in said passage in said second body portion, for translating axially in said passage from a first predetermined axial position to a second predetermined axial position in response to increasing intake manifold pressure such that above a second predetermined intake manifold pressure, said slide valve means translates axially to said second predetermined axial position to connect said first channel with said intake manifold pressure means and such that at and below said second predetermined intake manifold pressure, said slide valve means translates axially to said first predetermined axial positions to connect said second channel with said intake manifold pressure means;

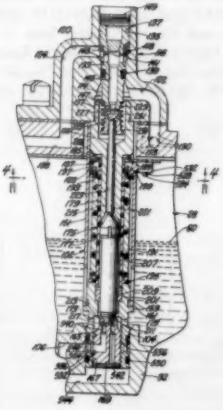
fuel flow controlling means, slidably mounted in said first cylindrical passage, for controlling the maximum fuel flow rate from said fuel control means to said internal combustion engine in response to intake manifold pressure such that when said slide valve means is in said first predetermined axial position, said fuel flow controlling means increases maximum fuel flow in response to increasing intake manifold pressure from a first predetermined maximum fuel flow rate when said intake manifold is at a first predetermined intake manifold pressure, to a second predetermined maximum fuel flow rate when said intake manifold pressure is at said second predetermined intake manifold pressure and such that when said slide valve means is in said second predetermined axial position, said fuel flow controlling means decreases the fuel flow to a third predetermined maximum fuel flow rate in response to increasing manifold pressure when said intake manifold pressure above said second predetermined intake manifold pressure so as to override said governor means and to override said operator actuating means to protect said internal combustion engine from overboost of said engine by said turbocharger means.

4,434,762

APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Ralph P. McCabe, Troy, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,585
Int. Cl.³ F02B 33/00; F02M 7/00
U.S. Cl. 123—438 10 Claims



1. A fuel metering system for a combustion engine having engine exhaust conduit means, comprising fuel carbureting means for supplying metered fuel flow to said engine, said carbureting means comprising first and second induction passage means for supplying motive fluid to said engine, a source of fuel, primary main fuel metering system means communicating generally between said source of fuel and said first induc-

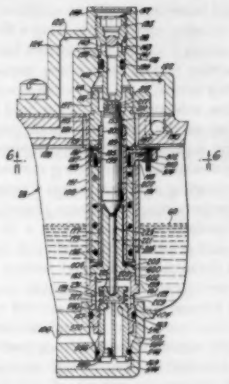
tion passage means, idle fuel metering system means communicating generally between said source of fuel and said first induction passage means, secondary main fuel metering system means communicating generally between said source of fuel and said second induction passage means, controlled modulating valving means effective to controllably increase and decrease the rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means, oxygen sensor means effective for sensing the relative amount of oxygen present in engine exhaust gases flowing through said exhaust conduit means and producing in accordance therewith a first output, said modulating valving means comprising solenoid winding means for actuation of said modulating valving means, electrical logic control means effective for receiving said first output signal and in response thereto producing a second output and effectively applying said second output to said solenoid winding means to thereby cause said modulating valve means to alter said rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means as to provide for rates of metered fuel flow therethrough ranging from a preselected "lean" fuel-air mixture ratio supplied to said engine to a preselected "rich" fuel-air mixture ratio supplied to the engine, said modulating valving means being effective upon occurrence of an electrical failure in said electrical logic control or said solenoid winding means to thereafter permit only that rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means as will result in said preselected "lean" fuel-air mixture ratio being supplied to said engine, wherein said idle fuel metering system means comprises idle air bleed means, wherein said primary main fuel metering system means comprises first fuel flow orifice means, wherein said secondary main fuel metering system means comprises second fuel flow orifice means, wherein said idle air bleed means is spaced from both of said first and second fuel flow orifice means, said modulating valving means comprising housing means, said housing means comprising a first end portion, a second end portion, said first end portion being adapted for operative connection to said carbureting means, said second end portion being adapted for operative connection to said carbureting means, solenoid motor means, said solenoid motor means comprising axially extending spool means, said spool means comprising a generally centrally disposed tubular portion, said solenoid winding means being carried by said spool means, axially extending armature means situated in said tubular portion for reciprocating movement therein, motion transmitting means operatively connected to a first end of said armature means and generally axially aligned therewith, a first opening formed through said first end portion for permitting the free axial movement of said armature means therein, a second opening formed through said second end portion for permitting the free movement of said motion transmitting means therein, a first valve member operatively connected to a second end of said armature means opposite to said first end, said first valve member being effectively juxtaposed to both of said first and second fuel flow orifice means, a second valve member operatively connected to said motion transmitting means, said second valve member being effectively juxtaposed to said air bleed means, said first and second valve members moving in unison with said armature means so that when said first valve member moved toward both said first and second fuel flow orifice means said second valve member moves away from said air bleed means and when said first valve member moves away from both of said first and second fuel flow orifice means said second valve member moves toward said air bleed means, and resilient means effective for continually resiliently urging said armature means in a direction whereby said first valve member is moved toward both of said first and second fuel flow orifice means and said second valve member is moved away from said air bleed means.

4,434,763

APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Ralph P. McCabe, Troy, and Keith D. Marsh, St. Clair Shores, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,670
Int. Cl.³ F02M *11/00*
U.S. Cl. 123—440 **8 Claims**



1. A fuel metering system for a combustion engine having engine exhaust conduit means, comprising fuel carbureting means for supplying metered fuel flow to said engine, said carbureting means comprising first and second induction passage means for supplying motive fluid to said engine, a source of fuel, primary main fuel metering system means communicating generally between said source of fuel and said first induction passage means, idle fuel metering system means communicating generally between said source of fuel and said first induction passage means, secondary main fuel metering system means communicating generally between said source of fuel and said second induction passage means, controlled modulating valving means effective to controllably increase and decrease the rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means, oxygen sensor means effective for sensing the relative amount of oxygen present in engine exhaust gases flowing through said exhaust conduit means and producing in accordance therewith a first output, said modulating valving means comprising solenoid winding means for actuation of said modulating valving means, and electrical logic control means effective for receiving said first output signal and in response thereto producing a second output and effectively applying said second output to said solenoid winding means to thereby cause said modulating valving means to alter said rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means as to provide for rates of metered fuel flow therethrough ranging from a preselected "lean" fuel-air mixture ratio supplied to said engine to a preselected "rich" fuel-air mixture supplied to said engine, wherein said modulating valving means further comprises first and second valve means positionable by said solenoid winding means, wherein said idle fuel metering system means comprises idle air bleed means, said first valve means being effective to vary the effective rate of flow of bleed air through said air bleed means in order to thereby alter said rate of material fuel flow through said idle fuel metering system means, wherein said primary main fuel metering system means comprises first fuel flow orifice means, wherein said secondary main fuel metering system means comprises second fuel flow orifice means, said second valve means being effective to vary the

effective rate of flow of fuel through both of said first and second fuel flow orifice means to thereby alter said rate of metered fuel flow through each of said primary and secondary fuel metering system means, said first and second fuel flow orifice means comprising a valve orifice body, said valve orifice body comprising a first threaded portion for operative threadable engagement with associated support structure, and pilot diameter means for pilot-like reception of said valve orifice body by said associated support structure, said idle air bleed means spaced from both of said first and second fuel flow orifice means, said modulating valving means comprising housing means, said housing means comprising a first end portion, a second end portion, said first end portion being adapted for operative connection to said carbureting means, said second end portion being adapted for operative connection to said carbureting means, solenoid motor means, said solenoid motor means comprising axially extending spool means, said spool means comprising a generally centrally disposed tubular portion, said solenoid winding means being carried by said spool means, axially extending armature means situated in said tubular portion for reciprocating movement therein, motion transmitting means operatively connected to a first end of said armature means and generally axially aligned therewith, a first opening formed through said first end portion for permitting the free axial movement of said armature means therein, a second opening formed through said second end portion for permitting the free movement of said motion transmitting means therein, said second valve means operatively connected to said motion transmitting means, said second valve means being effectively juxtaposed to both of said first and second fuel flow orifice means, said first valve means being operatively connected to a second end of said armature means opposite to said first end, said first valve means being effectively juxtaposed to said air bleed means, said first and second valve means moving in unison with said armature means so that when said second valve means moves toward both said first and second fuel flow orifice means said first valve means moves away from said air bleed means and when said second valve means moves away from both of said first and second fuel flow orifice means said first valve means moves toward said air bleed means, and resilient means effective for continually resiliently urging said armature means in a direction whereby said second valve means is moved away from both of said first and second fuel flow orifice means and said first valve means is moved toward said air bleed means.

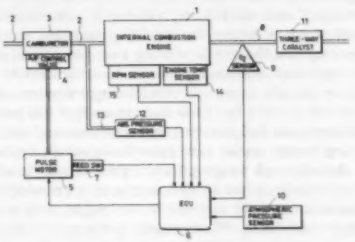
2. A valving assembly for variably restricting fluid flow through first and second spaced flow orifice means, comprising housing means, said housing means comprising a generally tubular housing portion, solenoid motor means, said solenoid motor means comprising axially extending spool means, said spool means comprising a generally centrally disposed spool tubular portion, a solenoid field winding carried by said spool means, axially extending armature means reciprocatingly situated in said spool tubular portion, a first valve member operatively connected to a first axial end of said armature means as to be effective to be juxtaposed to said first flow orifice means, a second valve member operatively connected to a second axial end of said armature means opposite to said first axial end as to be effective to be juxtaposed to said second flow orifice means, said second flow orifice means comprising first and second passage means, said first and second passage means leading to diverse areas, and valve seat body means, said valve seat body means having said first and second passage means formed therethrough, said valve seat body means further comprising an externally threaded portion for threadable engagement with said tubular housing portion, said valve seat body means when operatively threadably engaged with said tubular housing portion extending beyond said tubular housing portion to at least in part define annulus means for fluid flow thereinto from said first passage means, and said first and second valve members moving in unison with said armature means.

4,434,764

AIR/FUEL RATIO FEEDBACK CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING ATMOSPHERIC PRESSURE-DEPENDENT FAIL SAFE FUNCTION FOR O_2 SENSOR

Shumpei Hasegawa, Niiza; Shin Narasaka, Yono, and Kazuo Otsuka, Higashikurume, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,658
Claims priority, application Japan, Aug. 13, 1981, 56-128313
Int. Cl.³ F02M 7/18
U.S. Cl. 123—440 5 Claims



1. An air/fuel ratio feedback control system for combination with an internal combustion engine, comprising: first sensor means for detecting the concentration of oxygen present in exhaust gases emitted from said engine; valve means having a valve body disposed to determine the air/fuel ratio of an air/fuel mixture being supplied to said engine; electronic control means operable in response to an output signal of said first sensor means to drive said valve means, whereby the air/fuel ratio of said mixture is controlled to a predetermined value in a feedback manner responsive to changes in the concentration of oxygen present in exhaust gases emitted from said engine; means adapted to generate a first signal as long as a predetermined condition for effecting said feedback control of the air/fuel ratio of said mixture is fulfilled; means adapted to generate a second signal as long as said first sensor means is activated; means adapted to determine an actual air/fuel ratio of said mixture from the value of said output signal of said first sensor means and to generate a third signal having a binary value invertible depending upon whether the air/fuel ratio thus determined is larger or smaller than said predetermined value; safety means arranged to be supplied with said first, second and third signals for performing a predetermined safety action when no inversion ocurs in said third signal inputted thereto for a predetermined period of time while simultaneously said first and second signals are both inputted thereto; second sensor means for detecting ambient atmospheric pressure ; and means adapted to render said safety means inoperative when a value of ambient atmospheric pressure detected by said second sensor means is lower than a predetermined value.

4,434,765

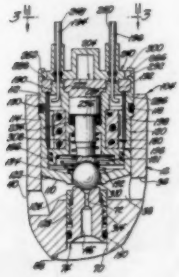
FUEL INJECTION APPARATUS AND SYSTEM

Philip V. Eshelman, Troy, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,899
Int. Cl.³ F02M 51/02, 51/08
U.S. Cl. 123—472 41 Claims

1. In combination, a combustion engine, fuel metering apparatus for supplying metered rates of fuel flow to said engine, said fuel metering apparatus comprising body means, induction passage means formed through said body means for supplying motive fluid to said engine, throttle valve means situated in said induction passage means for variably controlling the rate of flow of air through said induction passage means, fuel-air mixture discharge means situated in said induction passage means downstream of said throttle valve means, air passage

means communicating between a source of air and said fuel-air mixture discharge means, said air passage means comprising flow restriction means, said flow restriction means being calibrated as to provide for sonic flow therethrough at conditions of idle engine operation, fuel metering means for metering liquid fuel in response to engine demands and indicia of engine operation, said liquid fuel when metered by said fuel metering means being discharged into said air passage means at an area thereof downstream of said source of air and upstream of said flow restriction means, said flow restriction means comprising sonic venturi type restriction means, said fuel metering means for metering liquid fuel comprising a duty-cycle type fuel metering solenoid assembly, said fuel metering solenoid assembly comprising bobbin means, a ball armature means, and a field winding carried by said bobbin means, said bobbin means and said field winding being selectively adjustably positionable with respect to said ball armature means, said field winding being intermittently energizable during metering of said liquid fuel as to cause said ball armature means to move toward and



away from a closed position with respect to an associated valve seat member and thereby result in an average rate of flow of fuel past said ball armature means which constitutes the then metered rate of liquid fuel flow, unmetered fuel passage means for supplying unmetered fuel to said fuel metering means upstream of said fuel metering means, pressure regulator means operatively communicating with said unmetered fuel for regulating the pressure thereof to a preselected superatmospheric magnitude, said fuel-air mixture discharge means comprising generally annular means defining generally annular passage means, said air-passage means in communicating with said fuel-air mixture discharge means communicates with said generally annular passage means, and discharge port means communicating between said generally annular passage means and said induction passage means for directing the flow of the fuel-air mixture within said generally annular passage means to said induction passage means, said discharge port means comprising a plurality of discharge ports spaced from each other and directed generally radially inwardly of said induction passage means.

4,434,766

AIR ASSIST DEVICE OF FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

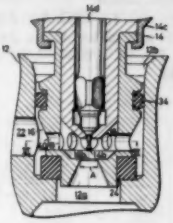
Hiroki Matsuoka; Yuichi Kato, and Minoru Iwata, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 23, 1982, Ser. No. 410,843
Claims priority, application Japan, May 7, 1982, 57-76969
Int. Cl.³ F02M *23/00*
U.S. Cl. 123—472 **9 Claims**

1. An air assist device of a fuel injection type internal combustion engine, comprising:

an air assisted injector for blowing out assist air together with fuel to facilitate the atomization of fuel; and

an adapter having an annular peripheral wall containing a plurality of assist air intake ports constituting an assist air introducing portion close to a nozzle of said air assisted injector and having at the bottom of said wall an assist air jet opening,



wherein the diameter of each opening of the assist air intake ports is smaller than the diameter of the assist air jet opening,

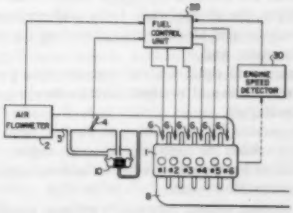
the total opening area of the assist air intake ports being larger than the area of the assist air jet opening.

4,434,767

OUTPUT CONTROL SYSTEM FOR MULTICYLINDER INTERNAL COMBUSTION ENGINE

Tokio Kohama, Nishio; Seizi Huzino; Hideki Obayashi, both of Okazaki; Hisasi Kawai, Toyohashi, and Tsuneyuki Egami, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 23, 1981, Ser. No. 333,781
Claims priority, application Japan, Dec. 24, 1980, 55-183058
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—481 **6 Claims**

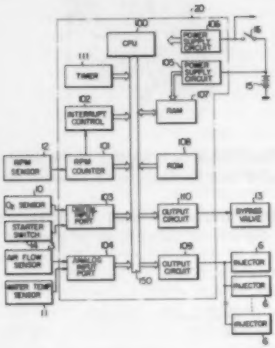


1. An output control system for a multicylinder internal combustion engine having an intake pipe comprising an engine speed detector for detecting the speed of the engine, signal output means for producing a signal corresponding to an output required of the engine, first control means for receiving signals of said engine speed detector and said signal output means, said first control means controlling the number of combinations during predetermined combustion cycles in all cylinders by periodically stopping fuel injection to a specific cylinder to periodically stop the fuel combustion during the cycles in accordance with the signals of said engine speed detector and said signal output means and supplying fuel to the engine intermittently thereby to subject the engine to a partial cylinder operation, and second control means including a constant pressure valve for controlling the pressure in the intake pipe at a constant level at the time of partial load operation of the engine.

4,434,768
AIR-FUEL RATIO CONTROL FOR INTERNAL COMBUSTION ENGINE

Masakazu Ninomiya, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 13, 1982, Ser. No. 397,874
Claims priority, application Japan, Jul. 15, 1981, 56-110386
Int. Cl.³ F02M 51/00, 23/04
U.S. Cl. 123—489 11 Claims



1. A method for controlling an air-fuel ratio comprising the steps of:

detecting whether a predetermined engine operating condition exists;

detecting a relationship between an acutal air-fuel ratio and a predetermined air-fuel ratio different from an air-fuel ratio providing optimum fuel consumption with an oxygen sensor exposed to exhaust gases;

maintaining, when said predetermined operating condition of said engine is detected, the air-fuel ratio at said predetermined air-fuel ratio at least during said predetermined operating condition;

changing gradually, during a steady-state operating condition after the termination of said predetermined operating condition, the air-fuel ratio from said predetermined air-fuel ratio to said air-fuel ratio providing an optimum fuel consumption; and

maintaining said optimum fuel consumption providing air-fuel ratio until said predetermined operating condition is detected again.

7. An apparatus for controlling an air-fuel ratio comprising:

air supply means for suppying air to an engine;

sensor means for detecting whether at least a predetermined engine condition exists;

oxygen sensing means, exposed to exhaust gases, for detecting a relationship between an actual air-fuel ratio and a predetermined air-fuel ratio different from an air-fuel ratio providing optimum fuel consumption to generate an output signal corresponding to said detected relationship;

processor means responsive to said sensor means for determining whether said engine is at said specified operating condition or a steady-state operating condition and for performing a computation for maintaining the air-fuel ratio of the mixture at said predetermined air-fuel ratio in accordance with the output signal from said oxygen sensing means when it is determined that said engine is at said predetermined operating condition, a computation for gradually changing the air-fuel ratio of the mixture from said predetermined air-fuel ratio to said air-fuel ratio providing an optimum fuel consumption when it is determined that said engine is at said steady-state operating condition and a computation for maintaining said optimum fuel consumption providing air-fuel ratio until it is determined that said engine is again at said predetermined operating condition;

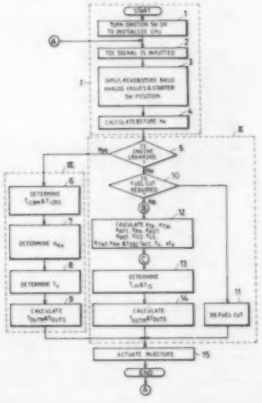
a read/write memory for storing the results of the computations of said processor means at respective addressable locations thereof; and

fuel supply means for supplying fuel to be mixed with air supplied by said air supply means in accordance with the results of the computations of said processor means.

4,434,769
DECELERATION FUEL CUT DEVICE FOR INTERNAL COMBUSTION ENGINES

Yutaka Otobe, Shiki; Akihiro Yamato, Sayama, and Shigeo Umesaki, Iruma, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,187
Claims priority, application Japan, May 20, 1981, 56-75847
Int. Cl.³ F02B 3/00
U.S. Cl. 123—493 5 Claims



1. In a fuel supply control system including a fuel injection device for injecting fuel into an internal combustion engine having an intake pipe, at least one throttle valve arranged in the intake pipe, an exhasust pipe, and a catalytic device arranged in the exhaust pipe for purifying exhaust gases, said catalytic device being of the type increasing in temperature with an increase in the amount of exhaust gases flowing into said catalytic device, said fuel supply control system being operable to electronically control said fuel injection device for control of the amount of fuel being supplied to said engine, a deceleration fuel cut device comprising:

means for detecting operating conditions of said engine, said detecting means including a first sensor for detecting the rotational speed of said engine and a second sensor arranged in the intake pipe of the engine at a location downstream of the throttle valve for detecting the pressure in said intake pipe of said engine;

means responsive to the outputs of said detecting means for determining a predetermined fuel cut condition, said fuel cut condition determining means being adapted to determine that said engine is in a condition requiring interruption of the supply of fuel to said engine when the engine rotational speed detected by said first sensor has a value higher than a predetermined value and simultaneously the intake pipe pressure detected by said second sensor has a value lower than a predetermined value above which the temperature of the catalytic device becomes excessively high, said predetermined intake pipe pressure value being set to higher values with an increase in the value of the engine rotational speed detected by said first sensor; and

fuel cut means responsive to the result of said determination

of said fuel cut condition determining means for causing said fuel injection device to cut off the supply of fuel to said engine.

4,434,770

FUEL INJECTION TIMING SIGNAL AND CRANK ANGLE SIGNAL GENERATING APPARATUS

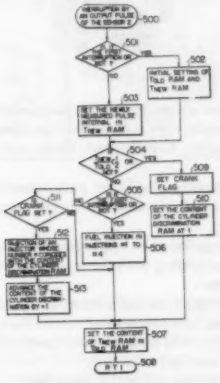
Hiroyuki Nishimura, Konosu; Shumpei Hasegawa, Niiza; Masahiro Watanabe, Sagamihara, and Haruo Furuya, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan and Honda Giken Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,427

Claims priority, application Japan, Feb. 17, 1981, 56-22580

Int. Cl.³ F02D *5/02*; **F02B** *3/00*

U.S. Cl. 123—494 **3 Claims**



1. A fuel injection timing signal and crank angle signal generating apparatus for an electronic fuel injection control system for vehicle engines comprising:

a rotation sensor for generating a first pulse at every cycle of fuel injection of an engine and a second series of pulses in said every cycle of fuel injection, said second series of pulses having equal intervals at given engine revolutions each corresponding to a fuel injection interval (θ_{TI}) represented by a crank angle, said first pulse being delayed from a predetermined one of said second pulses by a predetermined crank angle (θ_{TC}) and satisfying a relation given by, $\theta_{TC} \leqq \theta_{TI}/3$, said first pulse and said second series of pulses being substantially of the same pulse width; and

discriminating means for discriminating between a crank angle pulse and fuel injection timing pulses as to said first pulse and said second series of pulses generated by said rotation sensor,

said discriminating means measuring an interval between an instant pulse and a previous pulse every time each of said first and second pulses are received sequentially in the order of generation and indiscriminately between said first and second pulses,

said discriminating means comparing a last measured interval (T_{NEW}) with a first previously measured interval (T_{OLD}) and determining that an instant pulse is a said crank angle pulse if a ratio T_{NEW}/T_{OLD} is less than or equal to a predetermined value, and otherwise determining that said instant pulse is one of said fuel injection timing pulses.

4,434,771

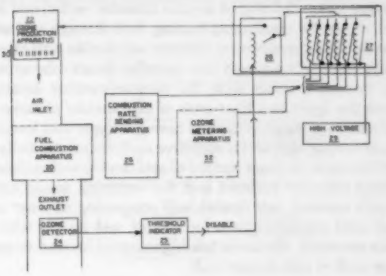
OZONE PRODUCTION SYSTEM

Israel Slomnicki, Rehovot Hess St. N=14, Rehovot, Israel

Continuation-in-part of Ser. No. 198,769, Oct. 20, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,364

Int. Cl.³ F02M *27/04*

U.S. Cl. 123—539 **10 Claims**



1. An ozone production system for use with hydrocarbon fuel combustion apparatus having an air inlet and an exhaust outlet, said system comprising:

a plurality of electrode pairs arranged in association with said air inlet;

radiation absorption sensing means associated with said exhaust outlet and arranged to detect and indicate the presence of ozone;

distributor means for sensing the rate of combustion of said combustion apparatus and providing a plurality of sequenced pulsed outputs; and

control means operative in response to said sequenced pulsed outputs and to an output of said radiation absorption sensing means for governing the supply of electricity to said electrode means for producing ozone at a controlled rate so as to limit the ozone emissions at said exhaust outlet.

4,434,772

COMBUSTION MIXTURE GENERATOR FOR INTERNAL COMBUSTION ENGINES

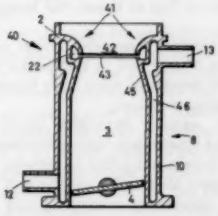
Günter Härtel; Werner Schiele, both of Neuss; Armin Schürfeld, Meerbusch; Valerio Bianchi, Neuss-Hoisten, and Anwar Abidin, Meerbusch, all of Fed. Rep. of Germany, assignors to Bosch & Pierburg System OHG, Neuss, Fed. Rep. of Germany

Continuation of Ser. No. 178,823, Aug. 18, 1980, abandoned. This application Jul. 8, 1983, Ser. No. 512,313

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949096

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **28 Claims**



1. In a combustible mixture generator for an internal combustion engine, said generator comprising an axially extending

upwardly arranged tubular wall having an upper end and a lower end and defining a mixture chamber therein, means for heating said tubular wall over at least part of the axial length thereof between the upper end and lower end, a flap-shaped throttle member, means mounting said throttle member at the lower end of said tubular wall and fuel metering means for directing fuel into said mixture chamber at the upper end thereof, said tubular wall comprising a double wall heat exchanger jacket defining an annular chamber within said double wall, means for conducting heating fluid through said annular chamber, the improvement wherein said double wall extending axially from adjacent said fuel metering means substantially to said throttle member with the throttle member located between the upper and lowr ends of said annular chamber, said fuel metering means is located between upper and lower ends of said tubular wall and is operative to direct substantially all of said fuel onto the inner surface of said double wall defining the mixture chamber between said fuel metering means and said throttle member, said double wall comprising an inner and an outer wall and said means for heating said double wall comprises electrical resistance heating material located within the inner wall of said double wall.

4,434,773

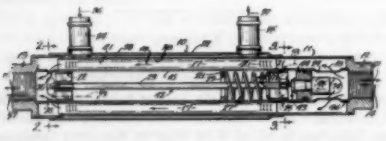
VALVE CONTROLLED FUEL HEATER WITH SELF-ADJUSTING VALVE

Dennis C. Granetzke, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Aug. 27, 1981, Ser. No. 296,899

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **8 Claims**



1. A fuel heater, comprising:

a source of fuel passage means for said fuel through said heater;

heated means;

a temperature responsive valve body movable between a first extreme position for directing said fuel through a path in heat receiving relationship to said heated means when the fuel temperature is cold, and a second extreme position that directs the fuel to bypass the heat means when the fuel is hot;

movable temperature responsive means responsive to the temperature of said fuel in said heater for moving said temperature responsive valve body between said first and second extreme positions;

an elongated, laterally distortable valve stem extending between said temperature responsive means and said valve body and thereby subjected to varying temperatures in said fuel heater for thereby moving said valve body; and

hinge means operatively connecting said elongated valve stem and valve body for permitting relative lateral movement therebetween, thereby tending to prevent binding of said valve body in misalignment of said stem and valve body due to said varying temperatures.

4,434,774

VAPORIZER FOR A LIQUEFIED PETROLEUM GAS ENGINE

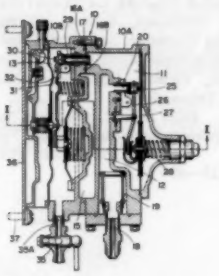
Tomofusa Horiuchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 30, 1982, Ser. No. 393,791

Claims priority, application Japan, Sep. 25, 1981, 56-151545

Int. Cl.³ F02G *5/00*; F02M *31/02*

U.S. Cl. 123—557 **6 Claims**



1. A vaporizer for a liquefied petroleum gas engine having a cooling system employing coolant, the vaporizer comprising:

(a) a housing having first, second, third, and fourth chambers;

(b) the housing having a fuel inlet port connected to a lower portion of the first chamber to supply liquid fuel to the first chamber;

(c) a first port disposed at an upper portion of the first chamber for communicating with the second chamber to supply fuel to the latter;

(d) said fuel inlet port having a cross-sectional area smaller than that of the first chamber whereby fuel flow through the first chamber will be at a lower speed than that of fuel flow through the fuel inlet port;

(e) a second port for communicating between the second chamber and the fourth chamber;

(f) an outlet for connecting the fourth chamber to the engine to supply fuel to the latter;

(g) mans for controlling flow through said first port for regulating pressure in the second chamber to a level whereby liquid fuel will vaporize; and

(h) means for controlling flow through said second port;

(i) the third chamber being connected to the cooling system to be supplied with the coolant, the third chamber being located adjacent to the first and second chambers and at least partially surrounding the first chamber so that the coolant in the third chamber will heat both liquid fuel in the first chamber and fuel vapor in the second chamber.

4,434,775

APPARATUS FOR CONTROLLING PRESSURIZED AIR SUPPLY TO ENGINES

Junjiro Yoshimura, Okazaki; Kenji Yamada, Aichi, and Haruyuki Obata, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 19, 1982, Ser. No. 399,956

Claims priority, application Japan, Jul. 21, 1981, 56-112952; Aug. 5, 1981, 56-116510; Sep. 14, 1981, 56-136601; Sep. 16, 1981, 56-137449; Sep. 16, 1981, 56-137450

Int. Cl.³ F02D *23/00*

U.S. Cl. 123—564 **18 Claims**

1. An apparatus for controlling pressurized air supply to an engine, comprising:

an intake passage connected to the engine at a downstream end thereof;

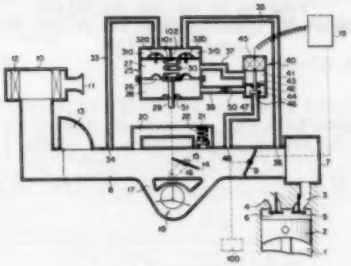
a throttle valve disposed at a downstream side of said intake passage;

a supercharger control valve disposed at an upstream side of said throttle valve in said intake passage;

a supercharging passage connected to said intake passage at both upstream and downstream sides of said supercharger control valve;

a supercharger disposed in said supercharging passage;

an actuator which has an actuating body provided in said actuator for dividing said actuator into first and second pressure chambers and operatively connected to said supercharger control valve to close said supercharger control valve when said actuating body is moved in a first direction to decrease the volume of said first pressure chamber and to open said supercharger control valve when said actuating body is moved in a second direction to increase the volume of said first pressure chamber, and which has urging means for urging said actuating body in said second direction;



a change-over valve which has a first pressure-receiving chamber communicating with said first pressure chamber, a second pressure-receiving chamber communicating with said second pressure chamber and a portion of said intake passage between said throttle valve and said supercharger control valve, and a valve body selectively positioned between a first position where said valve body allows said first pressure-receiving chamber to communicate with said second pressure-receiving chamber and also blocks said second pressure-receiving chamber from said intake passage and a second position where said valve body blocks said first pressure-receiving chamber from said second pressure-receiving chamber and allows said second pressure-receiving chamber to communicate with said intake passage; and

a pressure introducing passage having one end connected to the downstream of said throttle valve in said intake passage and the other end communicating with said first pressure chamber.

4,434,776

EGR CONTROL SYSTEM

Haruya Shirase, Kawasaki, and Takehisa Kondo, Kanagawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 17, 1981, Ser. No. 244,344

Claims priority, application Japan, Mar. 18, 1980, 55-35526[U]

Int. Cl.³ F02M *25/06*

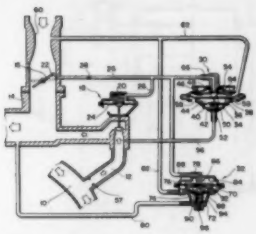
U.S. Cl. 123—568 **4 Claims**

1. In an internal combustion engine having an exhaust conduit and an induction manifold including a venturi portion, the combination of:

an EGR conduit fluidly interconnecting said exhaust conduit and said induction manifold;

an EGR flow control valve disposed in said EGR conduit for controlling the flow of exhaust gas therethrough, said EGR flow control valve having a vacuum motor including a vacuum chamber, said vacuum chamber being fluidly communicated with a source of vacuum;

a first vacuum modulation valve for modulating the vacuum prevailing in said vacuum chamber, said first vacuum modulation valve being responsive to a venturi vacuum signal which originates in said venturi portion and a pressure signal which originates in a zone of said EGR conduit



upstream of said EGR flow control valve and downstream of a flow restriction disposed in said EGR conduit; and

a second vacuum modulation valve for modulating the vacuum prevailing in said vacuum chamber, said second vacuum modulation valve being responsive to said venturi vacuum signal and an induction vacuum prevailing in said induction manifold.

4,434,777

FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

Max Straubel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,486

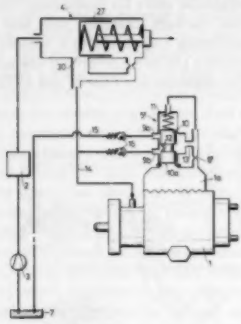
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127419

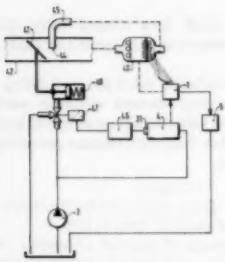
Int. Cl.³ F02B *47/08*

U.S. Cl. 123—568 **9 Claims**

1. A fuel injection apparatus for internal combustion engines having a fuel injection pump which includes a predetermined interior pressure for supplying a regulatable fuel injection quantity, a ventilation apparatus for the fuel injection pump and an exhaust gas recirculation means controlled by said fuel quantity, characterized in that a spring-loaded piston-type fuel quantity meter of a mixture regulator is disposed in an inlet to the fuel injection pump, said mixture regulator having a piston the position of which, determined by the fuel quantity at a particular time, is ascertained by a travel receptor, said travel receptor arranged to determine the exhaust gas quantity recirculated to an intake tube, further that disposed in a discharge of said injection pump is a pressure-controlled ventilation valve, which communicates with a heat exchanger, said valve ar-

ranged to be controlled by pump interior pressure (p_{pi}) and adjusted such that its pressure effecting the opening (p_0) is





greater than the maximum interior pressure of said injection pump in an exhaust gas test range.

4,434,778

AIR INDUCTION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

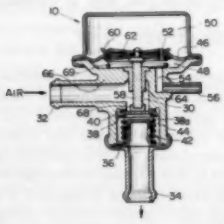
Hideo Morita, Yokohama, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 126,099, Feb. 29, 1980. This application Jan. 13, 1983, Ser. No. 457,560

Claims priority, application Japan, Mar. 6, 1979, 54-25763; May 8, 1979, 54-61528

Int. Cl.³ F02M *7/12*

U.S. Cl. 123—587 **14 Claims**



1. An air induction control device for an internal combustion engine having an intake passageway in which a throttle valve is disposed, comprising:

means defining an air passage for communicating upstream and downstream sides of the throttle valve in said intake passageway when opened;

a valve member disposed in said air passage and movable toward the downstream side thereof to open said air passage in response to pressure differential between the upstream and downstream sides of the throttle valve in the intake passageway; and

a diaphragm member mechanically connectable to and separable from said valve member and movable to move said valve member so as to open said air passage in response to vacuum prevailing in the intake passageway downstream of the throttle valve.

4,434,779

CIRCUIT FOR CONTROLLING THE PRIMARY DWELL TIME OF IGNITION TRANSFORMER

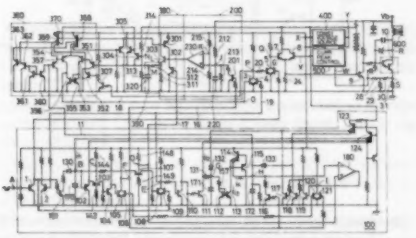
Norboru Yamamoto, Kariya; Tomoatsu Makino, Okazaki, and Ryoichi Okuda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 25, 1982, Ser. No. 352,454

Claims priority, application Japan, Feb. 27, 1981, 56-28901

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—609 **9 Claims**



1. A circuit arrangement for controlling the dwell time of current flowing in the primary winding of an ignition transformer in response to the ignition timing of an internal combustion engine, comprising:

first means responsive to said ignition timing for generating a ramp voltage having a constant peak value and a variable rate of increase in voltage as a function of the speed of said engine;

second means for successively generating a pulse having a pulse height substantially equal to the peak value of said ramp voltage and a pulse duration variable inversely as a function of the speed of said engine;

third means coupled to said second means for integrating said pulses supplied thereto to generate an integrated output; and

fourth means for comparing the instantaneous value of said ramp voltage with said integrated output to detect a difference therebetween and causing an ignition current to flow in said primary winding for a period corresponding to said difference.

4,434,780

EXTENDIBLE GRILL

Glen L. Hepner, P.O. Box 120, Trenton, Utah 84338

Filed Jan. 31, 1983, Ser. No. 462,709

Int. Cl.³ F24C *1/16*; F24B *3/00*

U.S. Cl. 126—9 B **11 Claims**

1. An expandible, portable grill, comprising:

a rigid, annular frame;

a plurality of parallel bars extending across the frame, each fastened at one end to one side of the frame, and at its other end to the opposite side of the frame; and

a pair of opposing extension members, each being substantially U-shaped, having two parallel legs, and slidably

attached at each of its ends to one of a pair of said parallel bars so that it is capable of being moved inwardly and outwardly along said bars relative to the center of the grill, and whereby said frame functions as a stop means for limiting the movement of the extension members out-

wardly from the center of the grill, said extension members being formed for remaining substantially in the plane of the grill, when a load is impressed on its upper side and the extension members are resting on other structures, as in cooking.

4,434,781

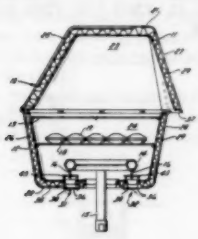
THERMALLY EFFICIENT BARBECUE GRILL

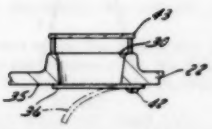
Walter Koziol, 18845 State Line Rd., Antioch, Ill. 60002

Filed Feb. 4, 1982, Ser. No. 345,703

Int. Cl.³ A47J 37/00

U.S. Cl. 126—25 R **15 Claims**





10. A fuel efficient gas barbecue grill apparatus comprising:

an insulated base member constructed and arranged to receive a gas inside intake conduit and a burner element with a grill member positioned above said burner element and noncombustible briquettes positioned between said burner element and said grill member;

an insulated cover member dimensioned to enclose the top of said base member;

vent means operatively associated with said base and cover members; and

a thermally actuated vent means operatively positioned in conjunction with said vent means in said base and cover member so that upon the temperature in said base member increasing, said thermally actuated vent means will proportionately permit more air to enter said base member through said vent means in said base member and upon said temperature in said base member decreasing, said thermally actuated vent means will proportionately limit the amount of air entering said base member.

4,434,782

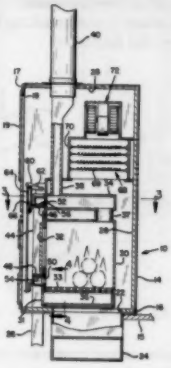
HEATING FURNACE

Joseph P. Traeger, 250 S. Oak, Mt. Angel, Oreg. 97362

Filed Jan. 7, 1982, Ser. No. 337,689

Int. Cl.³ F24C 1/14

U.S. Cl. 126—77 **3 Claims**



1. A furnace comprising:

an upstanding casing,

a combustion chamber mounted within and adjacent the base of the casing,

a heat exchanger disposed over said combustion chamber and a duct connecting the combustion chamber and the heat exchanger,

a flue connecting with the exchanger extending out of the casing,

insulation on the inside of the casing surrounding the combustion chamber and heat exchanger,

a fresh air supply duct for supplying combustion air extending into the base of the casing,

a first duct connection connecting the fresh air supply duct and the combustion chamber whereby combustion air is supplied the combustion chamber,

a second duct connection connecting the fresh air supply duct and the heat exchanger,

a first damper for said first duct connection and a second damper for said second duct connection, and damper control means for effectuating opening of said first damper with closing of the second and closing of the first damper with opening of the second.

4,434,783

CONTROLLED FIREPLACES FOR CONCURRENTLY VARYING COMBUSTION AIR AND CONVECTED AIR

Michael C. O'Gorman, 16 The Lane, Fritwell nr. Bicester, England

PCT No. PCT/GB81/00080, § 371 Date Dec. 16, 1981, § 102(e) Date Dec. 16, 1981, PCT Pub. No. WO81/03218, PCT Pub. Date Nov. 12, 1981

PCT Filed May 1, 1981, Ser. No. 333,864

Claims priority, application United Kingdom, May 2, 1980, 8014804

Int. Cl.³ F24B 7/00

U.S. Cl. 126—121 **7 Claims**

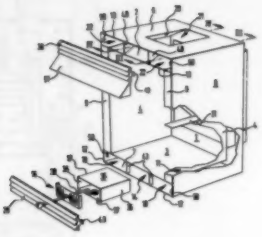
1. A fireplace constructed for concurrently controlling the flow of combustion air for a fire in the fireplace and convected air for room heating, comprising:

an open-fronted inner casing, for accommodating a fire,

having a rear side panel, an open top panel, a bottom panel, and two lateral side panels;

outer casing means disposed about the inner casing, means for forming separate first and second air spaces within said outer casing means and below the inner casing and means for forming passage means within said outer casing means communicating with the first air space and disposed for providing flow of convected air upwardly from the first air space along at least one of the side panels of the inner casing, the first and second air spaces being adapted for communication therebetween;

first air inlet means communicating with the first air space at the front of the fireplace;



second air inlet means communicating with the second air space for introducing thereto air external to the room to be heated;

air outlet means communicating with the passage means at the front of the fireplace, above the level of the first air inlet means;

valve means operable to vary the extent of communication between the first and second air spaces for varying the flow of air from the second air inlet means, through the second air space, into the first air space; and

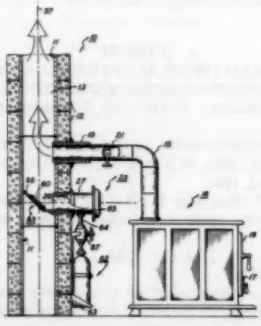
means for providing communication between said second air space and said inner casing for supplying air from the second air space into the inner casing and having control vent means for controlling the supply of air into the inner casing.

4,434,784

VIEWING APPARATUS FOR A CHIMNEY

Frederic D. Van Patten, R.D. 1. Stock Rd., Hannibal, N.Y. 13074

Filed May 23, 1983, Ser. No. 497,038
Int. Cl.³ F23J *11/00*
U.S. Cl. 126—312 **5 Claims**



1. Apparatus for visually monitoring the vent chamber of a chimney while the chimney is drawing exhaust gases through the flue of a stove that includes

a hollow member sealed in one wall of the chimney below the flue entrance of the stove, said hollow member having an inside end face passing into the vent chamber of the chimney and an outer end face protruding beyond said one wall of the chimney,

a bracket means angularly disposed within the vent chamber adjacent to the inside end face of said hollow member,

a mirror means supported upon the said bracket within the vent chamber to permit the chamber to be viewed through the hollow member,

an observation door having a transparent window therein, said door being removably mounted over said outside end face of said hollow member, and

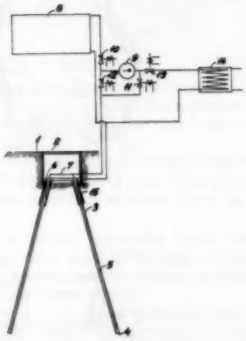
sealing means acting between said door and said hollow member to provide an airtight joint therebetween when the door is in a closed position whereby said hollow member provides an airtight passage communicating with the vent chamber.

4,434,785

HEAT ACCUMULATOR

Niels K. Knudsen, Rolighedsvej 13, DK-8722 Hedensted, Denmark

Continuation of Ser. No. 261,207, May 6, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 431,725
Claims priority, application Denmark, Sep. 6, 1979, 3720/79
Int. Cl.³ F24H *7/00*; F28D *00/00*
U.S. Cl. 126—400 **2 Claims**



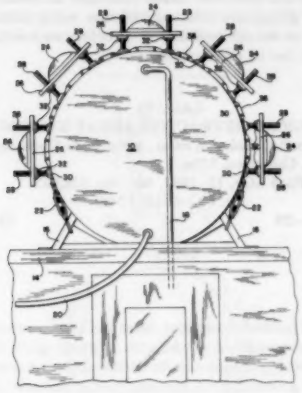
1. An underground heat accumulator of the low temperature type for storing solar energy from a solar collector, comprising a plurality of buried double pipe assemblies, each including an inner pipe and an outer pipe connected in parallel and each extending at an upper end thereof from a double, annular pipe connection at the bottom of a central well having a cover, energy from said collector being passed through the inner pipe to the bottom of each double pipe assembly and from there to the outer pipe thereof, the heat stored in the heat accumulator being given off from the bottom of each outer pipe through the respective inner pipe and supplied to an evaporator of a heat pump by means of a pump, wherein the improvement comprises that at least the upper ends of the pipes are vertically, conically inclined with a common geometric vortex near the surface of the ground and that each outer pipe is formed with a tubular insulating jacket extending from the bottom of the central well to a depth where soil is substantially unaffected by annual thermal fluctuations.

4,434,786

ADJUSTABLE SOLAR HEAT COLLECTOR

Joseph A. Lanciault, 18 Blossom St., Apt. 2, Fitchburg, Mass. 01402

Filed Sep. 23, 1982, Ser. No. 421,965
Int. Cl.³ F24J 3/02
U.S. Cl. 126—424 4 Claims



1. An adjustable solar heat collector comprising a tank for holding a fluid, a chain of separate light condensing members on the tank at the exterior thereof, each member including a lens, a separate frame holding each lens, a plurality of support rods for each frame, each rod being adjustably mounted relative to its frame, a rod base for each rod, means connecting the rod bases to form the chain,

means to adjust the frames and lenses on the rods to cause the respective frames to approach or move away from the tank, said means also being selectively operable to tilt the frames with respect to the tank.

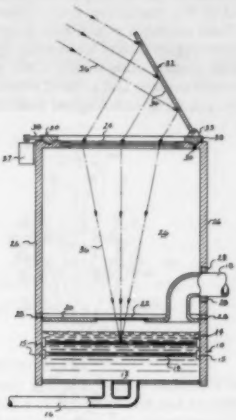
4,434,787

SOLAR POWERED REACTOR

Ronald R. Young, II, Box 336XA, Woodville Cir., Sumter, S.C. 29150

Continuation-in-part of Ser. No. 87,380, Oct. 23, 1979, abandoned, which is a continuation of Ser. No. 870,349, Jan. 18, 1978, abandoned. This application Sep. 10, 1981, Ser. No. 301,007
Int. Cl.³ F24J 3/02; G02B 5/12
U.S. Cl. 126—438 5 Claims

1. A solar powered reactor for collecting both direct and reflected sunlight and converting solar energy contained therein into heat energy of a heat transfer fluid, comprising a reactor vessel defining a compartment for containing a heat transfer fluid, an inlet in said vessel for introducing a heat transfer fluid into said compartment, and an outlet in said vessel for discharging heated fluid from said compartment, said vessel containing an upper light transmitting wall portion for passage of sunlight into said compartment, at least one heat conducting metal element located in said compartment adjacent said light transmitting wall portion and in communication with a heat transfer fluid in said compartment for receiving sunlight thereon, a large concentrating lens positioned in spaced relation above said vessel and light transmitting wall portion for receiving and concentrating sunlight through said light transmitting wall portion and onto said at least one metal element in said compartment, solar reflector means supportably mounted adjacent said lens for movement thereabout and including a light reflecting surface pivotally adjustable to



reflect sunlight onto said concentrating lens for concentrated direction thereby into said reactor vessel.

4,434,788

ENHANCER OF ANTI-TUMOR EFFECT

Shigekazu Nakatsugawa, Kyoto, Japan, assignor to Yamasa Shoyu Kabushiki Kaisha, Japan

Filed Jul. 27, 1981, Ser. No. 286,753
Claims priority, application Japan, Aug. 11, 1980, 55-109320
Int. Cl.³ A61K 31/505
U.S. Cl. 128—1.1 12 Claims

1. A method of enhancement of anti-tumor effect which comprises administering to a tumor-bearing animal under an anti-tumor treatment an enhancer or the anti-tumor effect selected from the group consisting of 3'-deoxyguanosine and 3'-deoxyuridine.

4,434,789

APPARATUS FOR TREATING CARCINOMA OF THE UTERINE CERVIX

Pullatikurthi P. Kumar, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Division of Ser. No. 104,358, Dec. 17, 1979, Pat. No. 4,331,131. This application Jun. 29, 1981, Ser. No. 278,738
Int. Cl.³ A61N 5/00
U.S. Cl. 128—1.2 21 Claims

1. Applicator apparatus for radioactive therapy of uterine cervix carcinoma and comprising:

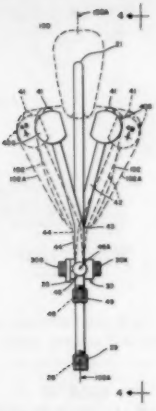
A. a tubular tandem having a longitudinally extending finite tandem-length defined by a closed lead-end for insertion through the uterine cervix and a closeable trail-end permitting charging of radioactive material into the tandem leadward portion, the tandem trailward length portion lying substantially parallel to a sagittal-plane;

B. an adapter member slidably surrounding the tandem trailward portion and including releasable arresting means for establishing the adapter member at an empirically selected position between the tandem lead-end and the trail-end;

C. two ovoidal assemblies each comprising an elongate tubular arm having a directionally longitudinal finite arm-length less than said tandem-length and defined by a closed leading-end and a closeable trailing-end permitting charging of radioactive material into the arm lead-length portion, each ovoidal assembly also comprising an ovoid type spacer means removably surrounding the arm lead-

length substantially at its leading-end, each ovoidal assembly at the arm trail-length portion being removably pivotably attachable to the adapter member whereby the leading-end of the respective arms is free to move laterally away from the tandem leadward length portion;

D. septa protection means for restraining the laterally movable arms leading-ends within a mid-plane perpendicular to the sagittal-plane and located substantially midway the vasicovaginal and rectovaginal anatomical septa; and



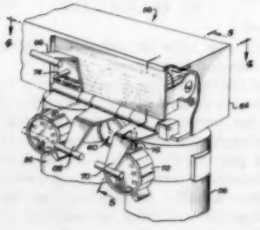
E. the septa protection means comprising arm trail-length portions spaced on opposite transverse sides from the tandem trail-length portion and lying substantially parallel to the sagittal-plane and further comprising pivot means extending directionally transversely between the adapter member and arm trail-length portions of the two ovoidal assemblies.

4,434,790

VAPORIZER SUBSYSTEM FOR AN ANESTHESIA MACHINE

Russell Olesen, Huntington, N.Y., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

Filed Aug. 18, 1981, Ser. No. 293,994
Int. Cl.³ A61M *11/00*
U.S. Cl. 128—200.14 **11 Claims**



1. A vaporizer subsystem for use with a gas anesthesia machine providing a diluent flow of oxygen and anesthesia gas for selective diversion through one of a plurality of direct reading vaporizers, and providing an independent oxygen flow for selective diversion through at least one universal type vaporizer, said vaporizer subsystem comprising:

at least three isolation valves, operable independently of controls on the vaporizers, and each movable between an on position in which gas flow is diverted through a corresponding vaporizer and an off position in which the corresponding vaporizer is isolated; and

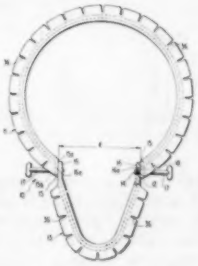
interlock means for preventing more than one of said isolation valves from being switched to the one position at any particular time, wherein only a selected one of the vaporizers, whether of the direct-reading or the universal type, may be coupled to the anesthesia system at any time, and wherein said interlock means functions automatically to move a previously selected isolation value from its on position to its off position by selecting and actuating a different one of said isolation valves.

4,434,791

SURGICAL RETRACTOR ARRAY SYSTEM

W. Dale Darnell, Caledonia, Miss., assignor to Humboldt Products Corp., Columbus, Miss.

Filed Mar. 15, 1982, Ser. No. 358,082
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **21 Claims**



1. A universal, surgical retractor frame array system assemblable into a plurality of annular, hinged retractor frame units of various different annular shapes adaptable to conform to the surface contours of different body portions of surgical patients for retaining elastic tubing stay members inserted into notches spaced apart around each retractor frame unit periphery, said system comprising a plurality of rigid, planar frame sections of various outline shapes in the plane of the frame section, each frame section having a first straight end portion with a hole therethrough and a second straight end portion with a threaded hole therethrough, each frame section having a uniform transverse cross-section with contoured notches spaced apart and extending inwardly from a common side forming each retractor unit outer periphery when hingedly joined to other frame sections of said array system; and threaded connecting means for insertion through said end portion holes to releasably and hingedly connect the two end portions of each said frame section to the end portions of other frame sections of said array system to permit said frame sections to be releasably connected together to alternatively form any of various differently shaped, annular retractor frame units.

4,434,792

ADJUSTABLE ABDUCTION DEVICE FOR TREATMENT OF METATARSUS ADDUCTUS

Steven L. Rosenberg, 2901 Wilshire Blvd., Ste. 345, Santa Monica, Calif. 90403

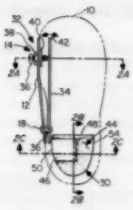
Filed Mar. 19, 1982, Ser. No. 359,724
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 R **4 Claims**

1. A therapeutic device for treatment of metatarsus adductus comprising:

a shoe with a sole, an innersole, a heel end, a toe end, a medial side, a lateral side and a medial vamp/quarter last seam;

a support bracket rigidly secured to said medial side;

means attached to said support bracket at a position anterior of said last seam, adjacent said toe end, and laterally of said medial side, for abducting a foot at the first metatarsal-phalangeal joint, said abducting means being laterally adjustable from the external medial side of said shoe, wherein said abducting means comprises a rigid resilient plate and an adjusting screw, said plate being secured to said bracket at a position posterior of said last seam, said adjusting screw being threadably attached to said bracket



anterior of said last seam, said plate abutting to said screw and being laterally movable at its unsecured end in response to advancement of said adjusting screw; and

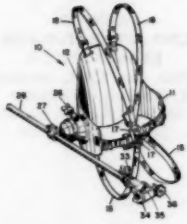
means disposed to said heel end for supporting a heel of said foot in a manner to prevent the metatarsal foot joint from collapsing as the forefoot is abducted, wherein said heel supporting means comprises a pad, said pad having a top face, said top face having a region of maximum thickness closest to anterior and medial edges of said pad and having regions of minimum thickness along lateral and posterior edges of said pad thereby to form a varus wedge.

4,434,793

PELVIC STABILIZER

Charles A. Willits, 9791 La Cresta Cir., Huntington Beach, Calif. 92646

Filed Aug. 21, 1981, Ser. No. 294,906
Int. Cl.³ A61F *13/00*; A61B *19/00*
U.S. Cl. 128—134 **12 Claims**



1. A device usable in diverse environments for positioning a worker adjacent to a structure in such a fashion that said worker can perform useful tasks, said device comprising:

a shaped, rigid reaction surface adapted to generally conform to the back of said worker; said surface having extensions adapted to overlie the hip areas of said worker;

fastening means for securing said surface to said worker;

a single stabilizer arm having a proximal end, a proximal portion, and a distal end;

at least one of said extensions having an adjustable connector attached thereto which is releasably connectable to said proximal portion;

clamp means at said distal end for providing attachment to said adjacent structure,

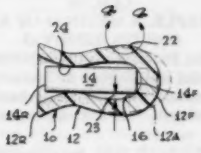
whereby, the orientation of the worker is adjustably securable by said worker with respect to said structure.

4,434,794

DISPOSABLE EAR PLUG

Howard S. Leight, 3945 Ridgemont Dr., Malibu, Calif. 90265

Filed Jun. 15, 1981, Ser. No. 273,367
Int. Cl.³ A61F *11/02*
U.S. Cl. 128—152 **6 Claims**



3. An ear plug comprising:

a resilient plug body which is hollow to form a cavity, said plug body having a closed front end and an open rear end opening to said cavity enabling its reception in the ear and having outside walls adapted to directly contact the surface of the ear canal;

said plug body is constructed of dip-molded closed cell foam material, with said outside walls of the body defining a multiplicity of small bumps formed solely by closed cells of said form material which lie at the surface of said body;

a stem lying in said hollow body, said stem having a front end lying at the front of said cavity, and said stem having a rearward end extending rearwardly substantially no further than the rear of said plug body;

said stem being freely slideable within at least the rearward portion of said cavity.

4,434,795

INSTRUMENT FOR APPLYING LIGATING CLIPS

Robert W. Mericle, Bridgewater, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 49,379, Jun. 18, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,180
Int. Cl.³ A61B *17/00, 17/12*
U.S. Cl. 128—303 R **3 Claims**

1. An instrument for applying a ligating clip, said clip having first and second leg members joined at their proximal ends by a resilient hinge means and terminating at their distal ends in latch means, said instrument comprising a pair of handles pivoted about a hinge point, said handles crossing at said hinge point and extending beyond the hinge point to form a pair of clip closing jaws having opposed inner faces, each of said jaws having a recessed clip receiving channel in the substantially planar inner face thereof, each said channel having a base composed of two stepped substantially planar segments, which segments are generally parallel to the hinge line of said hinge point and a pair of side walls extending perpendicularly from said base segments, said channel extending from the tip of said

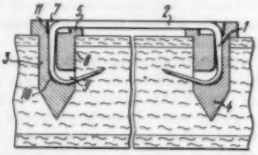
jaw furtherest from said hinge point rearwardly towards said hinge point, said channel having a length at least equal to the length of the clip to be applied by said instrument, each channel having an opposed cylindrical recess disposed at the step in the base of the channel and extending between said side walls and being spaced from the tip of said jaw, the said walls extending from the base segment in each channel furtherest from said hinge point being greater than those on the other side of said step whereby the jaws do not interfere with the closing and latching of the clip.

4,434,796

SURGICAL STAPLE, A METHOD OF AND FORCEPS FOR ITS REMOVAL

Igor S. Karapetian; Ivan A. Korolkov; Nikolai N. Kapitanov; Boris A. Smirnov, and Tatyana L. Ivanova, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki, Moscow, U.S.S.R.

Filed Feb. 19, 1982, Ser. No. 350,398
Claims priority, application U.S.S.R., Apr. 7, 1981, 3275314
Int. Cl.³ A61B *17/08*
U.S. Cl. 128—335 **4 Claims**



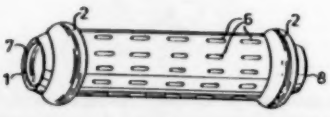
1. A surgical staple, comprising two legs, a web interconnecting said two legs, pointed-end rods adapted to be fitted on each of the staple legs, each of said rods having a head with a slot for said web to pass, a through hole or passage in said rod for the respective staple leg to pass, said hole being open at said slot in said head and at the side surface of said rod, while the rigidity of said staple legs decreases from the zone of their interconnection with the web towards their end.

4,434,797

CATHETER

Torsten Silander, Stockholm, Sweden, assignor to AB Tesi, Stockholm, Sweden

Continuation of Ser. No. 202,439, Aug. 19, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,753
Claims priority, application Sweden, Jan. 12, 1979, 7900282
Int. Cl.³ A61M *29/00*
U.S. Cl. 128—343 **7 Claims**



1. A catheter, intended to be inserted into a body duct to maintain the passageway therethrough, comprising:

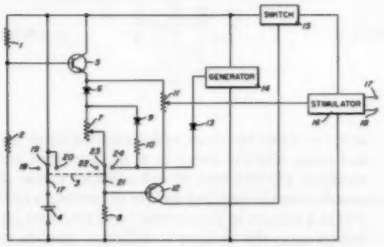
a tubular shell of a plastic material which is provided with retaining means in the form of multiple noncontiguous beads on the outer surface of said shell; said beads being constrained to encircle and at least partially cover said shell and being characterized by consisting of a dehydrated hydrophilic plastic substance which swells upon absorbing body fluids such that said beads are of a substantially greater diameter when in the swollen state and thereby function to enlarge adjacent portions of said body duct after becoming swollen therein and act thereby to retain said shell within said duct.

4,434,798

CONTROL CIRCUIT OF A FUNCTIONAL AND THERAPEUTIC STIMULATOR

Amadej Trnkoczy; Miha Stopar; Dusan Filipic, all of Ljubljana, and Joze Opeka, Vrhika, all of Yugoslavia, assignors to Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenj, Velenje, Yugoslavia

Filed Oct. 23, 1981, Ser. No. 314,463
Claims priority, application Yugoslavia, Oct. 23, 1980, 2724/80
Int. Cl.³ A61N *1/30*
U.S. Cl. 128—421 **3 Claims**



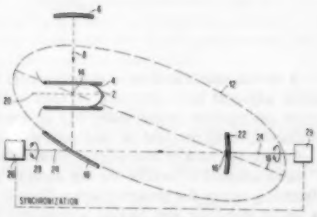
1. A control circuit for a functional and therapeutic stimulator that produces output pulses, which control circuit comprises a battery, switching means for connecting said battery to the circuit and for selecting between proportional and cyclic modes of operation of the stimulator, a first control means for adjusting the relative amplitude of the output pulse of the stimulator, a second control means for adjusting the absolute amplitude of the output pulse of the stimulator, a pulse group generator for defining the length of pulse groups of the stimulator in the cyclic mode of operation, and an electronic switching means for switching on the stimulator.

4,434,799

ULTRASOUND APPARATUS FOR MEDICAL EXAMINATIONS

Jon C. Taenzer, Palo Alto, Calif., assignor to Siemens AG, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 354,011
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **22 Claims**



1. An ultrasound apparatus for medical examinations of a patient, comprising in combination:

(a) an ultrasonic wave-generating transducer for providing ultrasonic waves;

(b) a first ultrasound window;

(c) first guiding means containing a fluid medium for guiding said ultrasonic waves to said first ultrasound window;
(d) a second ultrasound window;
(e) said first and said second ultrasound windows defining an examination gap for introducing and insonifying a portion of a patient positioned therein, said gap having a main insonification direction;
(f) an ultrasonic receiving transducer for converting at least a portion of an acoustic image field received from said gap into electrical signals;
(g) second guiding means containing a fluid medium for guiding ultrasound transmitted through said gap from said second ultrasound window to said ultrasound receiving transducer;
(h) mirror means associated with said second guiding means and having a curved surface for focusing ultrasound waves passing through said gap at said ultrasonic receiving transducer, thereby forming said acoustic image field and forming an image of said organ of the patient on said receiving transducer; and
(i) means for oscillating said curved mirror means, said curved mirror means thereby sweeping said acoustic image field across said receiving transducer;

wherein said mirror means comprise a single concave mirror, having an ellipsoidal surface for reflecting said ultrasound waves passing through said gap, and wherein said ellipsoidal surface is a portion of an ellipsoid having a first and a second focus, and wherein said mirror is positioned such that said first focus is located within said gap and said second focus is located on said ultrasonic receiving transducer.

4,434,800

TYMPANOMETRIC APPARATUS

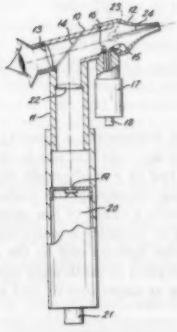
Michael Anson, London; Andrew C. Pinder, Barnet, and Alan R. Palmer, St. Albans, all of England, assignors to National Research Development Corporation, London, England

Filed Jun. 4, 1982, Ser. No. 385,265

Claims priority, application United Kingdom, Jun. 10, 1981, 8117847

Int. Cl.³ A61B 6/00

U.S. Cl. 128—665 **10 Claims**



1. Tympanometric apparatus comprising a housing including first and second mutually transversely communicated portions of generally tubular form, said first housing portion having a speculum at one end thereof, viewing means at the other end thereof, first optical means located between said speculum and viewing means, and a light source and a sound source both located between said speculum and first optical means and respectively operable to project a light beam and sound through said speculum, and said second housing portion communicating with said first housing portion adjacent to said first optical means, having a photodetector extending across a small area thereof spaced from said first optical means, and second optical means located between said photodetector and said first optical means, said speculum affording application of said beam and sound towards the tympanum of a subject to be examined with the apparatus, said first optical means partially transmitting and reflecting reflection of said beam from said tympanum respectively towards said viewing means and photodetector, said viewing means facilitating direction of said speculum relative to said tympanum, said second optical means focusing said beam of reflection in the plane of said photodetector, and said sound causing oscillation of said tympanum with consequent variation in the optical path of said reflection and the output of said photodetector.

4,434,801

APPARATUS FOR TESTING PHYSICAL CONDITION OF A SELF-PROPELLED VEHICLE RIDER

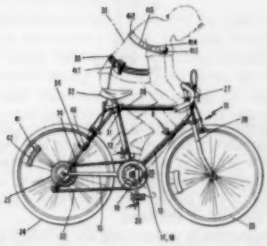
Oscar Jiminez, Miami, and Frank J. Bianco, Pembroke Pines, both of Fla., assignors to Biotechnology, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 145,765, Apr. 30, 1980, Pat. No. 4,367,752. This application Mar. 8, 1982, Ser. No. 355,329

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.³ A61B 5/02

U.S. Cl. 128—689 **30 Claims**



5. Apparatus for testing the physical condition of a cyclist comprising means adapted to be mounted on the subject for monitoring and deriving a first signal indicative of heart activity of the subject, means adapted to be mounted on a cycle for deriving a second signal indicative of distance traversed by the cycle during testing, input means for deriving at least one signal indicative of a predetermined physiological parameter of the subject, a clock source for deriving a timing signal during testing of the cyclist, computer means responsive to the first, second, predetermined physiological parameter and timing signals for calculating deriving a signal indicative of physical activity of the cyclist being tested, and indicator means responsive to the physical activity signal.

4,434,802

BLOOD COLLECTION UNIT

Francois Rilliet, Geneva, Switzerland, assignor to Dematex Development & Investment Establishment, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 233,168, Feb. 10, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 400,711

Claims priority, application European Pat. Off., Jan. 21, 1982, 82200074

Int. Cl.³ A61B 5/14

U.S. Cl. 128—764 **17 Claims**

1. A blood-collection unit for use in connection with a tubular needle-holder carrying a double-ended hollow needle extending coaxially within the holder, the unit comprising:

a transparent primary tube having first and second open ends and a narrow bore having a diameter larger than the outside diameter of the needle, said needle extending into said bore;

a transparent secondary tube of considerably larger diameter than the primary tube and considerably greater volumetric capacity than the primary tube, the secondary tube having at least one open end;

the narrow bore of the primary tube having a diameter which is significantly closer to the diameter of the needle bore than to the inner diameter of the secondary tube, the difference of the primary tube narrow bore diameter and the needle bore diameter being such that when blood enters the primary tube from the needle a peripheral lateral attraction is produced on the blood flux which comes to fully occupy the primary tube narrow bore, the length

of the primary tube being at least 2D+1 where D is the inner diameter of the secondary tube and l is the length of the needle which is penetrable in the primary tube;

a stopper having a skirt sealably fitting over and around an open end of one of the two tubes and sealing membrane closing the end of the tube;

means concentrically connecting the primary and secondary tubes whereby at least one open end of the primary tube is enclosed in the secondary tube, the unit forming a closed communicating space for the collection of blood and said open end of the primary tube having a free passageway such that a complete blood suspension including liquid and solid phases can pass from one tube to the other.

4,434,803

DEVICE FOR FOETAL BLOOD SAMPLING IN UTERO

Philippe Jeanty, Ecaussinnes, Belgium, assignor to Laboratoires Biotrol S.A., Paris, France

Filed Aug. 5, 1981, Ser. No. 290,321

Claims priority, application France, Aug. 6, 1980, 80 17416

Int. Cl.³ A61B *6/00, 10/00*

U.S. Cl. 128—770 **4 Claims**

1. A device for sampling blood from the umbilical cord of a foetus in utero, said device comprising:

(a) two cannula-forming tubes fixed to each other along their lengths, said cannula-forming tubes having outer dimensions suitable for passing through a mother's uterus to reach a foetus in the uterus and having proximal ends which, in use, are adjacent to the user and distal ends which, in use, are adjacent the umbilical cord;

(b) a stem sized and shaped to fit slidably in one of said cannula-forming tubes, said stem having a distal end terminating in a resilient hook which is sized and shaped to catch the umbilical cord of a foetus in utero, said stem being sized and shaped so that, when it is inserted in said one of said cannula-forming tubes in use, the proximal end of said stem extends outwardly of the proximal end of said one of said cannula-forming tubes for manipulation by the user and the distal end of said stem extends outwardly of the distal end of said one of said cannula-forming tubes in position to hold the umbilical cord in position for sampling;

(c) a hollow needle sized and shaped to fit slidably in the other of said cannula-forming tubes, said hollow needle having a sharp distal end and being sized and shaped so that, when it is inserted in said other of said cannula-forming tubes in use, the proximal end of said hollow needle extends outwardly of the proximal end of said other of said cannula-forming tubes for manipulation by the user and the distal end of said hollow needle extends outwardly from the distal end of said other of said cannula-forming tubes in position to puncture an umbilical cord being held by the resilient hook at the distal end of said stem;

(d) a trocar sized and shaped to fit slidably in said one of said cannula-forming tubes, said trocar having a sharp distal end; and

(e) means to secure said trocar in said one of said cannula-forming tubes with the distal end of said trocar extending forwardly of the distal end of said one of said cannula-forming tubes.

4,434,804

SMOKING ARTICLE

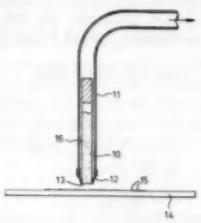
Anthony J. N. Bolt, and Brian C. Chard, both of Bristol, England, assignors to Imperial Group Limited, Bristol, England

Filed Jun. 9, 1981, Ser. No. 271,986

Claims priority, application United Kingdom, Jun. 21, 1980, 8020405

Int. Cl.³ A24B *3/12*

U.S. Cl. 131—309 **6 Claims**



1. A method of introducing a quantity of solid particulate flavor material having a particle size in the range 3–25 micron into the tobacco rod of a ready-made cigarette or cigar, the method comprising entraining the particulate material in a stream of air to form a cloud of the particulate material, and causing the cloud of particles to enter and pass along the tobacco rod from the light-up end to the mouth end so as to provide a concentration of particulate material in the tobacco rod that is greater at either end of said rod than between its ends.

4,434,805

APPLICATOR FOR APPLYING GLUE TO A TRAVELLING STREAM OF TIPPING PAPER

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Division of Ser. No. 163,065, Jun. 26, 1980, Pat. No. 4,361,156. This application Jun. 30, 1982, Ser. No. 393,537

Int. Cl.³ A24D *1/04, 3/00, 3/04*

U.S. Cl. 131—362 **7 Claims**

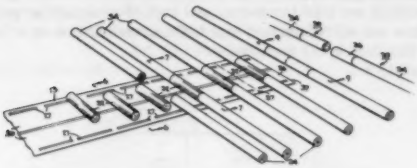
1. A filter cigarette construction comprising

a tobacco column;

a filter at one end of said tobacco column; and

a strip of tipping paper circumferentially disposed about said

tobacco column and said filter, said strip having a layer of glue thereon for securing said strip to said tobacco column



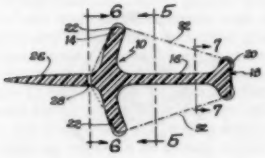
and said filter and auxiliary means within said layer for securing said strip to said tobacco column.

4,434,806

DENTAL FLOSS HOLDER

James M. Givens, 4929 Collwood Blvd., C-5, San Diego, Calif. 92115

Filed Jun. 7, 1982, Ser. No. 385,988
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—91 **1 Claim**



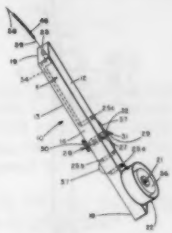
1. A dental floss holder comprising:
(a) a crossbar defining a pair of oppositely directed lateral arms;
(b) a central stem extending generally orthogonally from generally centrally of said crossbar to a terminus;
(c) a corridor defined in the end of each of said arms and another corridor defined in said terminus for entraining a length of dental floss therethrough such that two lengths span between respective lateral arms and said terminus;
(d) a tie-down integral with and proximate to said crossbar to tie the ends of length of floss the intermediate portions of which are passed tautly through said corridors;
(e) said lateral arms extending out well beyond the lateral extent of said terminus such that said two lengths of floss converge together in one direction such that when said strands are engaged between teeth and the respective upper and lower jaws and said holder is reciprocated in a direction axial of said stem, said two strands saw up and down between the teeth;
(f) said lateral arms, stem, terminus, and tiedown being unitary such that said holder is a one-piece unit;
(g) said tie-down comprising an apertured spindle extended from the crossbar opposite the direction of said stem to permit tying down floss through the aperture in said spindle, such that said apertured spindle defines said tie-down;
(h) said spindle being tapered to a point to define a tooth-pick-projection, and
(i) said entire holder being symmetrically extended about the axis of said spindle whereby said holder is easily spinnable to encourage the nervous twiddling thereof by the owner; and,
(j) said lateral arms being resilient and bowed toward said terminal to impart a positive elasticity into said holder and positively tension said two lengths.

4,434,807

DENTAL FLOSSING AID

Joseph E. Huskey, P.O. Box 476, Copperhill, Tenn. 37317

Filed Sep. 21, 1981, Ser. No. 304,116
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R **7 Claims**



1. A dental flossing device, comprising:
a floss mounting assembly including means for holding a supply of dental floss;
an elongated extension member attached to and protruding from said mounting assembly;
tensioning means associated with said extension member for developing tension in a length of dental floss drawn from the floss supply held at said mounting assembly when the floss is drawn along a floss path from the floss supply through said tensioning means along the length of said extension member toward the outermost end of said extension member, said tensioning means including a plurality of floss accepting bores formed in said extension member and spaced apart from one another along said extension member, each said floss accepting bore extending through said extension member at an angle to the longitudinal axis of the extension member;
floss advancing means for overcoming the tension of said tensioning means to facilitate withdrawing additional lengths of dental floss from the supply of dental floss held at said floss mounting assembly, said floss advancing means including a first floss engaging member movably mounted on said extension member to engage the length of floss at a point in the floss path between adjacent one of said floss accepting bores, whereby movement of said floss engaging member increases the length of the floss path to be followed by the length of floss.

4,434,808

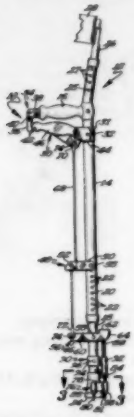
ANTI-SKID DEVICE FOR A CANE, CRUTCH, OR THE LIKE

Mark G. Burak, 6045 Fifth Ave. South, Minneapolis, Minn. 55419

Filed Jun. 18, 1982, Ser. No. 389,646
Int. Cl.³ A45B *9/04*; A61H *3/02*
U.S. Cl. 135—80 **13 Claims**

1. Anti-skid device for a cane, crutch, or the like having a bottom end and a hand hold member, comprising, in combination: a non-skid member; means for movably mounting the non-skid member between a first, raised non-engaged position and a second, lowered surface engaging position and allowing the non-skid member to rotate about a vertical axis generally parallel to but spaced from the cane, with the non-skid member having a removed portion for partially surrounding the lower portion of the cane and defining a first abutment portion and a second abutment portion located on opposite sides of the lower end portion of the cane; means formed on the non-skid member for contacting the surface in a non-skid manner, with the non-skid member being rotatable about the vertical axis between a first position wherein the first abutment portion abuts with a side of the lower end portion of the cane and a second position wherein the second abutment portion abuts with the opposite

side of the lower end portion of the cane to insure that the surface contacting means engages with the surface even though the cane is at an angle to the surface and to aid in knocking off any surface residue such as snow or ice from the



non-skid member; means for biasing the non-skid member in one of the first or second raised or lowered positions; and means for moving the non-skid member against the bias of the biasing means to the other of its first and second raised or lowered positions.

4,434,809

PIPE COUPLING

John I. F. Rogstadius, Sidensvansvägen 6, Älvsjö, Sweden

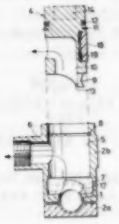
PCT No. PCT/SE80/00308, § 371 Date Jul. 15, 1981, § 102(e) Date Jul. 15, 1981, PCT Pub. No. WO81/01737, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 1, 1980, Ser. No. 285,103

Claims priority, application Sweden, Dec. 6, 1979, 7910060

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—318 **7 Claims**



1. A pipe coupling for connecting a branch pipe to a feed-pipe, comprising coupling parts sealingly embracing the feed-pipe, a cylindrical guide passageway in one of the coupling parts having an axis radial to said feed-pipe, a piston sealingly inserted in the guide passageway for rotation about said axis and provided at its inner end with a knife-shaped cutting-up member and formed with a passageway for flow connection between the feed-pipe and the branch pipe connected to the coupling part, so that in assembled position of the coupling parts a portion of the feed-pipe radially intersects the guide passageway, characterized in that the knife-shaped member of the piston is offset to one side of the axis and is located within said passageway alongside said intersecting portion of the feed-pipe, and the cutting edge of the knife-shaped member extends in one direction longitudinally of said piston from a point alongside said pipe to at least to the same level as the shell surface of said feed-pipe portion located fartherest inwardly in the guide passageway, so that upon rotation of the piston without any axial translation, said knife-shaped member passes from one side of the feed-pipe to the other and cuts up at least a first hole in the feed pipe.

4,434,810

BI-DIRECTIONAL PRESSURE RELIEF VALVE

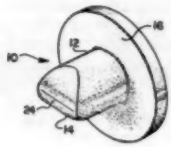
Gordon E. Atkinson, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

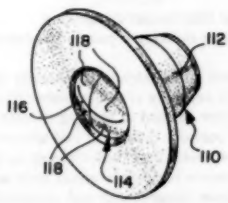
Continuation-in-part of Ser. No. 168,981, Jul. 14, 1980, Pat. No. 4,341,239. This application May 24, 1982, Ser. No. 380,971

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ F16K *17/18*

U.S. Cl. 137—493 **14 Claims**





1. A bi-directional pressure relief valve comprising:

a substantially cylindrical main body portion having a central longitudinal axis and defining a flow path through said valve;

said cylindrical main body portion terminating at one end thereof in a lip portion;

said lip portion having a curved contour about an axis of curvature extending substantially perpendicularly to and intersecting said central longitudinal axis;

said lip portion having a linear contour perpendicular to said central longitudinal axis such that said lip portion is radially asymmetrical about said central longitudinal axis;

at least one normally closed slit formed in said lip portion; and

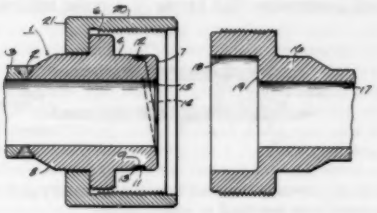
said main body and lip portions being formed of elastomeric material such that said slit opens to permit flow through said lip portion in a forward direction at or above a first predetermined pressure level, closes to check flow through said lip portion at pressures between said first pressure level and a second predetermined pressure level, and said lip portion collapses, thereby opening said slit and permitting reverse flow through said lip portion at reverse flow pressures greater than said second pressure level.

4,434,811

COUPLING SEAL AND METHOD OF ASSEMBLY

Ian G. Murdoch, Longview, Tex., assignor to The Oilgear Company, Milwaukee, Wis.

Filed Jul. 28, 1982, Ser. No. 402,561
Int. Cl.³ F16J 9/12
U.S. Cl. 137—515 6 Claims



1. An assembly of operatively flow-through members detachably secured together comprising a body member having a bore and a pin member having a cylindrical shaped lead end fitted in said bore;

said pin member having an annular slot in the cylindrical surface of said lead end, a spiral groove in the cylindrical surface of said lead end that extends from an end of said lead end to said annular slot, said spiral groove having a depth approximating but not greater than the depth of said annular slot; and said spiral groove makes an angle of not more than 10 degrees with said annular slot;

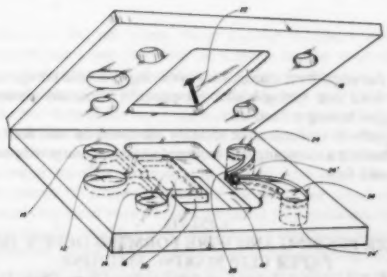
sealing means between said body member and said pin disposed in said annular slot, said sealing means comprising a pair of back up rings and an O-ring, one of said backup rings is made of very rigid material, said one of said back up rings is cut through transversely thereof to provide an end for introducing said one of said back up rings into said spiral groove and threading it into said annular slot, said other of said back up rings abutting said one of said back up rings and said O-ring.

4,434,812

FLUIDIC GAIN CHANGER

Robert L. Woods, Arlington, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1983, Ser. No. 486,134
Int. Cl.³ F15C 3/00, 1/08
U.S. Cl. 137—829 6 Claims



1. A fluidic gain changer comprising:

a planar fluidic amplifier, having a power jet and means for deflecting within a plane the fluidic jet from said power jet;

a pair of complementary fluidic receivers downstream from said planar fluidic amplifier, each of said pair of complementary fluidic receivers being offset symmetrically above and below said plane; and

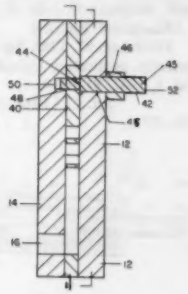
means for deflecting the fluidic jet from said planar fluidic amplifier in a direction perpendicular to said plane to linearly vary the gain between said pair of complementary fluidic receivers in a complementary manner.

4,434,813

LAMINAR PROPORTIONAL AMPLIFIER AND LAMINAR JET ANGULAR RATE SENSOR WITH ROTATING SPLITTER FOR NULL ADJUSTMENT

George Mon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 19, 1981, Ser. No. 323,146
Int. Cl.³ F15C 3/00
U.S. Cl. 137—829 8 Claims



1. An apparatus comprising:

input means having a fluid supply means;

a fluid supply nozzle to supply fluid to a laminar flow proportional amplifier;

a plurality of fluid outputs;

control nozzle means to control fluid flow through said amplifier from said fluid supply nozzle to said fluid outputs, wherein said control nozzle means acts directly on said fluid to proportionally control said fluid output;

a flow splitter means to proportionally divide the fluid flow flowing from said fluid supply nozzle to said fluid outputs, said flow splitter being positioned rotatable and externally adjustable to split the flow between said outputs in order to apportion the fluid flow between the outputs; and

means to externally rotate said flow splitter means to effect a null offset.

4,434,814

THROUGH FAULT PRESSURE FILTER FOR FAULT PRESSURE RELAY

Gerald O. Usry, Rome, Ga., assignor to General Electric Company, N.Y.

Division of Ser. No. 858,966, Dec. 9, 1977, Pat. No. 4,338,969.
This application Mar. 8, 1982, Ser. No. 355,940
Int. Cl.³ F15D 1/02
U.S. Cl. 138—44 4 Claims

1. A through-fault pressure filter for attenuating sinusoidal pressure variations in liquid-filled electrical apparatus comprising:

a disc-shaped member of liquid impervious material having a pair of first and second opposing surfaces and a plurality of periodic pressure attenuating passages through said

disc, said passages having a cumulative cross-sectional area and cumulative length corresponding to a single

theoretical passage having a ratio of length to diameter of from 10 to 1 to 40 to 1.

4,434,815

PIPEWORK

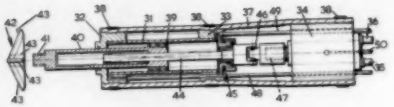
Thomas Flaherty, Altrincham, and Richard H. Price, Sale, both of England, assignors to John Kennedy (Civil Engineering) Limited, Manchester, England

Filed Apr. 22, 1982, Ser. No. 370,750

Claims priority, application United Kingdom, Apr. 23, 1981, 8112547; Jul. 1, 1981, 8120319

Int. Cl.³ F16L *55/18*

U.S. Cl. 138—97 **6 Claims**



1. A cutting apparatus for insertion into a branch pipe to cut an aperture in a liner located within a main pipe with which the branch pipe communicates, the apparatus comprising:

a body;

a cutting device supported by the body;

rotating means for rotating said cutting device, said rotating means being mounted with said body thereby preventing relative axial motion between said rotating means and said body;

a clamping member mounted with said body, said clamping member substantially surrounding said body and extending over the substantial length of said body;

means for actuating said clamping member so that it presses against the inside of the branch pipe in order to hold said body and said rotating means locked with respect to such branch pipe;

means for advancing said cutting device relative to said body; and

said rotating means including a motor which is articulated to said body.

4,434,816

SERVICE LINE INTERIOR BY-PASS FITTING

Bernard A. Di Giovanni, 96 Davis Ave., Hauppauge, N.Y. 11787, and Francisco J. Ciminiello, 21 Victor La., Woodbury, L.I., N.Y. 11797

Division of Ser. No. 955,990, Oct. 30, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,671

Int. Cl.³ F16L *55/18*

U.S. Cl. 138—109 **6 Claims**

1. A fitting for a blind liner assembly for service pipes, with the fitting having fixed attachment to one end of the liner wherein the improvement comprises:

(a) a hollow adapter having an externally threaded boss extending axially from one side thereof and of a diameter less than said adapter,

(b) an annular shoulder extending between the different diameters of said adapter and said boss and facing away from said boss,

(c) a first sealing gasket mounted on said adapter adjacent to said shoulder,

(d) a hollow compression head having one end of a diameter equal to said adapter and internally threaded so as to be threaded upon said boss to radially expand the same about said shoulder,

(e) said compression head having its opposite end provided

with an externally threaded boss of a diameter equal to said threaded boss provided by said adapter,

(f) said compression head providing a second annular shoulder extending between the different diameters of its ends,

(g) a second gasket mounted on said annular shoulder provided by said compression head, and

(h) a compression nut internally threaded so as to be threaded upon said threaded boss of said compression head to radially expand the same about said shoulder provided by said compression head.

4,434,817

EDGE YARN CLAMP FOR A WEAVING MACHINE

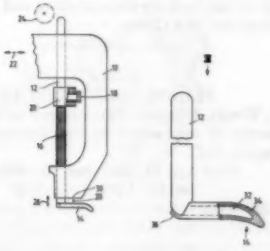
Walter Gruber, Constance, Fed. Rep. of Germany, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 29, 1981, Ser. No. 335,453

Claims priority, application Switzerland, Feb. 12, 1981, 149/81

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—429 **4 Claims**



1. An edge yarn clamp for a weaving machine comprising

at least one spring-biased reciprocally mounted clamping jaw having a foot, and

a push-on resilient shoe slidably mounted on said foot and having a clamping cap engaged against a rearward part of said foot.

4,434,818

WIRE FEEDING AND WIRE FORMING DEVICE FOR PAPER CLIP MAKING MACHINE

Jaw S. Yeh, Taipei, Taiwan, assignor to Shu-Chang Chen, Taipei Hsieng, Taiwan

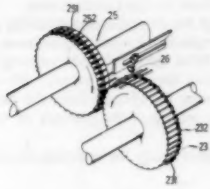
Filed Aug. 27, 1982, Ser. No. 412,181

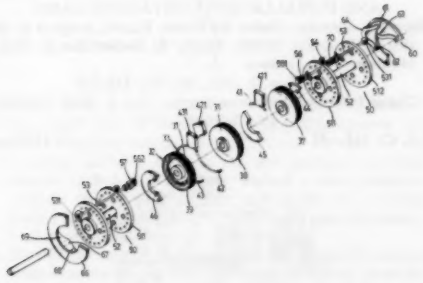
Int. Cl.³ B21F *45/16*

U.S. Cl. 140—82 **5 Claims**

5. An apparatus used for making paper clips downstream of a cutting machine, comprising, continuous belt means for receiving and advancing cut wires provided with pieces of

magnet at regular intervals for attracting and arraying cut wires, continuous chain means provided downstream of said belt means with one end of the conveying path thereof overlapping said belt means, said chain means including regularly spaced apart catching projections thereon for taking the cut wires from said belt means, first wheel means overlappingly provided downstream of said chain means and having regularly spaced catching teeth and first grooves at the same spaced apart intervals as said catching teeth, idler wheel means cooperative with said chain means to provide elevation in the path of said chain means to allow the cut wires to coincide with said catching teeth and said first grooves, said chain means leaving the cut wires with said first grooves after passing over said idler wheel means, second wheel means in contact with said first means, having second grooves at the same spaced apart intervals as said first grooves and a piece of second magnet in each said second groove, said first and second grooves coinciding each other and said second magnet elements attracting the cut wires from said first wheel at the point of coinciding, said second wheel means feeding the cut wires with a proper orientation of the cut wires, three annular members which are spaced apart and mounted for rotation on the same axis provided downstream of said second wheel means, each of said annular members having a plurality of forming die member on the rim thereof for receiving cut wires from said second wheel means, each of said die member having magnet elements for attracting the cut wires, each of said die members of each said annular member being axially aligned with each of said die members of other said annular members for simultaneously receiving a cut wire, three segmented ring members of different lengths provided, in a fixed position relative to said annular member, along the circumferences of corresonding said annular members with clearances provided therebetween similar to the diameter of the cut wire, ramming means provided at two sides of said annular member assembly adapted to exert bending forces on cut wires in the direction parallel to the axis of said annular member, said die members intermittently rising from the rim of said annular member to cooperate with said ramming means to bend the cut wires about said segmented ring members.



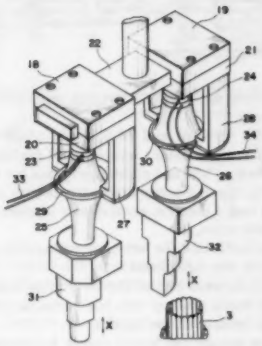


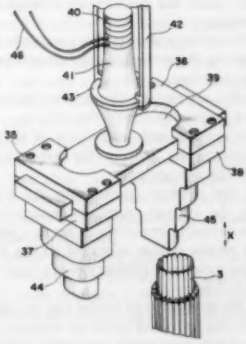
4,434,819

COIL FORMING MACHINE

Tadashi Kubota, Katano; Tokuhito Hamane, Hirakata, and Masaaki Tasai, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 27, 1981, Ser. No. 325,119
Claims priority, application Japan, Dec. 3, 1980, 55-171228
Int. Cl.³ B21F *3/00*
U.S. Cl. 140—92.1 3 Claims





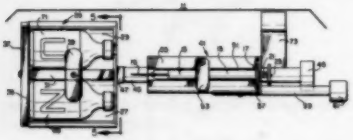
1. A coil forming machine which comprises:
a carrier means;
a high frequency energy generator means mounted on said carrier means for generating a high frequency vibration;
an amplitude transducer means connected to said generator for increasing the mechanical vibrations generated by the high frequency energy generator means;
a former assembly connected to said transducer means and around which a wire is to be wound to form a coil;
a flier mounted adjacent said former assembly for winding the wire around the former assembly to form the coil thereon; and
a coil receiving jig located adjacent said former assembly for supporting the coil thereon after such coil has been transferred from the former assembly.

4,434,820

SYRINGE LOADER AND METHOD

John P. Glass, Cava Industries, 79 La Grange Ave., Essington, Pa. 19029

Filed May 5, 1982, Ser. No. 374,946
Int. Cl.³ B65B *3/12*
U.S. Cl. 141—2 **11 Claims**



10. A method of loading a syringe with a correct dosage, comprising

opening the forward end of a bottle cradle by turning a forward bottle retainer into vertical position on a bottle cradle having left and right-hand seats for two bottles,

opening the top of a bottle cradle by turning an upper bottle retainer into a position parallel to a separator between the two bottle seats,

inserting a bottle into the left-hand seat and inserting another bottle into the right-hand seat,

closing the forward end of the bottle cradle by turning the forward bottle retainer into horizontal position in contact with the bottom of the bottles,

closing the top of the bottle cradle by turning the upper bottle retainer transversely into contact with the side wall of the bottles,

taking a syringe having a barrel with a collar at its rear end and a needle extending from its front end and having a plunger inside the barrel with a flange at the rear end of the plunger,

placing the syringe in a syringe groove in a syringe carriage and seating the syringe barrel collar in a collar slot in the syringe carriage,

holding the syringe in the groove by rotating a syringe retainer across the top of the groove,

filling the syringe with an amount of air equal to a desired total dosage by pulling the syringe plunger back to contact the dosage stop,

inserting the syringe needle into the left-hand bottle by turning the syringe carriage counterclockwise and moving the carriage forwardly as far as it will go into contact with a needle spacer mounted on the bottom cradle and inserting a carriage aligner pin in a right-hand aligner hole of the bottle cradle,

rotating the dosage gage across the syringe plunger, injecting into the left-hand bottle an amount of air equal to the required left-hand bottle ingredient dosage by pushing the syringe plunger forwardly to bring the bottom flange of the syringe plunger into contact with the dosage gage,

withdrawing the syringe needle from the left-hand bottle by pulling the carriage back into contact with the carriage stop,

inserting the needle into the right-hand bottle by turning the carriage clockwise and moving it forwardly as far as it will go into contact with the bottle cradle needle spacer and inserting the carriage aligner pin into the left-hand aligner hole of the bottle cradle,

freeing the syringe plunger to move forwardly by removing the dosage gage from across the plunger by rotating the dosage gage clockwise,

injecting into the right-hand bottle an amount of air equal to the required dosage of right-hand bottle ingredients by pushing the plunger forwardly as far as it will go,

loading the syringe with slightly more right-hand bottle ingredients than required by holding the carriage against the cradle and pulling the plunger back so that its bottom flange clears the dosage gage,

moving the dosage gage across the plunger by rotating it counterclockwise,

obtaining the correct dosage of right-hand bottle ingredients by injecting back into the right-hand bottle the overdosage amount of right-hand bottle ingredients by pushing the plunger forwardly so that its bottom flange contacts the dosage gage,

withdrawing the needle from the right-hand bottle by pulling the carriage back away from the bottle cradle until the carriage contacts the carriage stop,

inserting the needle into the left-hand bottle by turning the carriage counterclockwise and moving the carriage forwardly as far as it will go into contact with the needle spacer and inserting the syringe carrier aligner pin in the right-hand aligner hole of the bottle cradle,

removing the dosage gage from across the plunger by rotating the dosage gage clockwise,

loading the syringe with the correct dosage of left-hand bottle ingredients by holding the syringe carriage in place and pulling the plunger back into contact with the dosage stop,

removing the needle from the left-hand bottle by pulling the syringe carriage back to the carriage stop,

whereby the syringe has been loaded with the proper dosages of left and right-hand bottle ingredients,

freeing the syringe from the carriage by moving the syringe retainer from across the syringe barrel,

and carefully removing the syringe from the carriage without changing the setting of the plunger or touching the needle,

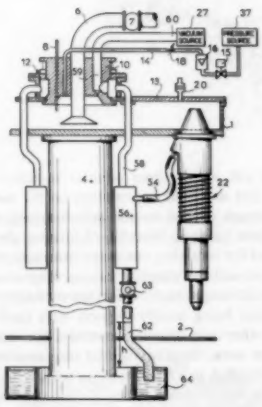
whereby the syringe is ready for injecting the correct dosage.

4,434,821

DEVICE FOR THE AUTOMATIC FILLING OF BOTTLES AND INSTALLATION CONTAINING SAME

Marcel A. Bacroix, Chalon sur Saone, France, assignor to Service de Propriete Indust. Centre de Recherches de Pont a Mousson, Paris, France

Filed Nov. 3, 1981, Ser. No. 317,731
Claims Priority, application France, Nov. 6, 1980, 8023699
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—44 **11 Claims**



1. A device for automatically filling bottles, comprising:

A. a vat for holding a supply of a liquid to be filled into said bottles;

B. a liquid reservoir;

C. a vacuum source; and

D. at least one filling device, each said filling device comprising:

(1) a filling tube having an upper end in communication

with the interior of said vat, said tube filling being vertically movable with respect to said vat;

(2) a vent tube axially traversing said filling tube and having a lower end below a lower end of said filling tube;

(3) a valve for opening and closing said filling tube in response to a position of a bottle to be filled;

(4) an air-liquid separator reservoir disposed below said vat and above said liquid reservoir, an upper end of said separator reservoir being communicated with an upper end of said vent tube and with said vacuum source; and

(5) a pipe connecting a lower end of said separator reservoir to said liquid reservoir, wherein:

a lowered pressure created by said vacuum source in said air-liquid separator reservoir pulls liquid from said liquid reservoir into said pipe for a predetermined height.

4,434,822

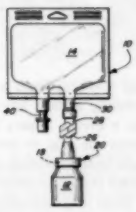
SYSTEM FOR THE STERILE MIXING OF MATERIALS

David Bellamy, Kenilworth, and Dale A. Smith, Barrington, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 91,688, Nov. 5, 1979, abandoned. This application Oct. 27, 1981, Ser. No. 315,399

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—98 **3 Claims**



1. In a fluid transfer assembly usable to interconnect and establish a fluid path between two locations,

the transfer assembly being of the type having a first fluid conduit including at one end thereof a first connector member having first meltable wall means for normally sealing said first connector member, and thus said associated conduit end, from the exterior,

a second fluid conduit including at one end thereof a second connector member having second meltable wall means for normally sealing said second connector, and thus said associated conduit end from the exterior, and

means for coupling said first and second connector means together with said first wall means held in facing contact with said second wall means while the coupled assembly is exposed to a source of radiant energy, the improvement comprising

one of said wall means includes a material which absorbs a sufficient quantity of the radiant energy so that, solely in response to its exposure to the radiant energy source, said one wall means is heated to its melting point to open said associated connector member, and

the other one of said wall means consists essentially of a material which, while said one wall means is being heated to its melting point by exposure to the radiant energy source, does not absorb a sufficient quantity of the radiant energy to melt said other wall means but which does conduct a sufficient quantity of heat energy from said one wall means during melting thereof to concurrently heat said other wall means to its melting point to also open said associated connector member,

whereby, during exposure of the coupled assembly to the radiant energy source, both of said wall means are opened by melting, one in response to thermal radiation and the other in response to thermal conduction, to open a fluid path between said fluid conduits.

4,434,823

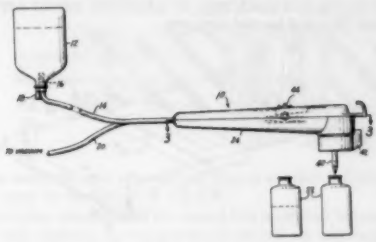
LIQUID TRANSFER DEVICE

Sydney Hudspith, La Crescenta, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 29, 1981, Ser. No. 278,549

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—329 **16 Claims**



10. A liquid transfer device comprising:

a body having a wall defining and enclosing a cavity within the body;

two hollow conduits extending from the cavity through the wall with at least a portion of each conduit projecting outwardly from the body;

two lengths of resilient tubing wherein the proximal end of each tubing extends through the body and is attached in fluid flow communication to one of the hollow conduits within the cavity of the body;

two inclined planes commonly inclined, spaced apart and fastened within the cavity of the body;

two compression blocks secured to the body within the cavity, spaced apart and spaced from the inclined planes;

a roller clamp having at least a portion thereof extending through the wall of the body, which roller clamp is adapted to travel between the inclined planes and compression blocks having two cams which engage the inclined planes and the two resilient tubes extending through the body such that travel of the roller along the inclined planes exerts a compressive force simultaneously against the resilient tubes; and

a double lumen needle releasably attached to the body and engaging the outwardly projecting portions of the two hollow conduits such that each lumen within the needle is in fluid flow communication with a resilient tube extending through the body.

4,434,824

ROUTER GUIDE

Patrick D. Bussey, R.R. 2, Fremont, Nebr. 68025

Filed Apr. 16, 1982, Ser. No. 369,147

Int. Cl.³ B27C *5/10*

U.S. Cl. 144—134 D **1 Claim**

1. A router guide for a router including a flat base portion having a power shaft extending downwardly therefrom, comprising,

first and second spaced-apart elongated supports adapted to be removably positioned on spaced-apart supporting surfaces, said supports having opposite ends, each of said supports having upstanding posts at the opposite ends thereof,

a collar selectively vertically adjustably mounted on each of said posts and having horizontally disposed openings formed therein adjacent the upper ends thereof,

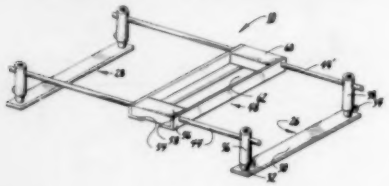
a first elongated support member having its opposite ends

selectively longitudinally adjustably received in the openings in the collars at one end of said first support and one end of said second support and extending therebetween,

a second elongated support member having its opposite ends selectively longitudinally adjustably received in the openings in the collars at the other end of said first support and the other end of said second support and extending therebetween,

means for removably maintaining said support members in said collars,

an elongated router track slidably mounted on said first and second support members and extending therebetween whereby said track may be selectively moved between said first and second supports,



said outer track comprising elongated spaced-apart angle members having a horizontal portion and a vertical portion,

said horizontal portions of said angle members being spaced from each other to define an elongated opening therebetween adapted to receive the router power shaft extending downwardly therethrough,

said vertical portions of said angle members being spaced apart approximately the width of the router base to limit lateral movement of the router with respect to the router track,

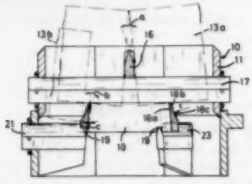
said angle members adapted to receive and support the router base thereon whereby the router may be slidably supported thereon for movement between the ends thereof.

4,434,825

FIREWOOD CLEAVING APPARATUS

Thomas H. Blomqvist, Sälgvägen 5, S-59300 Västervik, and Thorbjörn G. Lidström, Ramnegärde PL 521, S-59400 Gamleby, both of Sweden

Filed Dec. 1, 1981, Ser. No. 326,394
Claims priority, application Sweden, Dec. 12, 1980, 8008770
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **5 Claims**



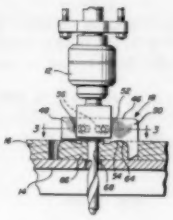
1. In a firewood cleaving apparatus having a number of cleaving irons and a ram for pushing a wood block against the cleaving irons in order to divide the block into billets, the cleaving irons being arranged with their sharp edges in a number of axially spaced planes disposed at right angles to the direction of motion of the ram, a first cleaving iron having its sharp edge disposed in a first plane to begin the division of the block into two parts or halves and a second cleaving iron having its sharp edge disposed in a second plane to begin the division of the respective part of the two parts into further two parts or quarter parts so as to obtain four parts of the block; the improvement in which there is disposed in a third plane the sharp edge of an annular cleaving iron concentric with the central axis of the apparatus and adapted to begin the division of each quarter part into a radially inner part and a radially outer part, and there are disposed in a fourth plane the sharp edges of four radially directed cleaving irons adapted to begin division of each of only the radially outer parts but not the radially inner parts, into two further halves, whereby the block of wood thus is subdivided into twelve billets during its passage through the apparatus.

4,434,826

WOOD WHEEL CUTTER

Floyd J. Whitaker, 310 Arbolado Dr., Frankfort, Ky. 40601

Filed Mar. 16, 1982, Ser. No. 358,716
Int. Cl.³ B27G *13/00*
U.S. Cl. 144—219 **6 Claims**



1. A tool for cutting a wheel from a thick panel of stock material, said tool including a head having structure for support of said head from a driven rotary support assembly for rotation therewith about an axis in predetermined position relative to said head, said head including an outwardly opening bit receiving bore formed therein coaxial with said axis, a slot formed through said head and opening laterally outwardly thereof in the direction in which said bore opens with the slot intersecting said bore and one side of said slot disposed substantially on a diameter of said bore, a drill bit having opposite base and work engaging ends and its base end snugley receivable in said bore, said base end including a flat thereon positionable substantially coplanar with said one side of said slot and with the remaining portion of said base end disposed to said one side of said slot, an elongated cutting plate snugly lengthwise slidably received in said slot with one end portion of said plate projecting outwardly of a corresponding end of said slot, one longitudinal edge of said plate being substantially seated in said slot and the other longitudinal edge portion of said one end portion of said plate including a beveled cutting edge extending therealong and contoured according to the desired radial cross-sectional shape of one side of the wheel to be cut and also the outer peripheral contour of said wheel, and clamp means clamping the portions of said head disposed on opposite sides of said slot against said plate and the flat equipped base end of said drill bit between the opposing side surface of said plate and the remote portions of said bore, the end portion of said beveled cutting edge remote from said slot including a terminal end portion generally paralleling said axis and extending outwardly of said other longitudinal edge portion of said plate.

4,434,827

TREE FELLER-BUNCHER

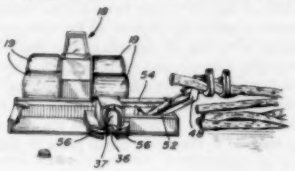
Gordon S. Franklin, 88 17th Ave., Deux Montagnes, Quebec, Canada J7R 3Z2

Filed Jun. 7, 1982, Ser. No. 385,724
Int. Cl.³ A01G *23/08*; B27B *5/02*
U.S. Cl. 144—336 **5 Claims**

1. A tree feller-buncher comprising a support means, means

to mount said support means on a vehicle, a carriage mounted on said support means for movement back and forth on said support means in a substantially horizontal direction substantially perpendicular to the direction of movement of said vehicle to and from one end of said support means, means to fell a tree moveably mounted on said carriage for movement between an inactive position and a cutoff position, an arm support means pivotally mounted on said carriage, grapple means mounted on said arm support means, for movement of said grapple means between a first engaging and clamping position for receiving a tree in said direction of movement of said vehicle, said tree being in its normally vertical attitude, and for clamping said tree to be cut by said means to fell, and a second position for depositing outwardly of said carriage to release a cut tree in a substantially horizontal attitude and at about a right angle to the side of a path along which said vehicle moves, and thereby to lay said cut tree on said side of said path and at about right angle thereof.

5. A method of felling and bunching trees with a vehicle having mounted on its front end a support means extending substantially horizontally, and substantially perpendicular to the direction of advance of said vehicle and a carriage mounted on said support means for movement back and forth along said support means perpendicular to said direction, said carriage



having means to fell a tree, moveably mounted thereon for movement between an inactive and a cutoff position as well as an arm support means pivotally mounted thereon, grapple means mounted on said arm support means for movement of said grapple means for engaging in said direction of advance of said vehicle, a tree in its normally vertical attitude position to a depositing position, to release a cut tree in a substantially horizontal attitude, said method comprising laterally positioning said carriage means on said support means and advancing said vehicle into a position wherein said means to fell can cut a tree and said grapple means by said direction of advance of said vehicle can engage said tree, clamping said tree in its normally vertical attitude, with said grapple means, and cutting said tree, maintaining said clamping of said cut tree in said grapple means while moving said carriage to one end of said support means and moving said arm support means and thereby displacing said grapple means outwardly of said carriage in the direction of said one end, supporting said tree, to said depositing position and thereby displacing said cut tree from its normally vertical attitude to a substantially horizontal attitude, and when said carriage is at said one end and said support means is outwardly of said carriage releasing said grapple means to deposit said tree, at about a right angle to the side of a path along which said vehicle moves and repeating said operations to fell further trees.

4,434,828

SCREWDRIVER WITH HANDLE FOR STORING BITS

Richard Trincia, 149 Dunsinane Rd., New Castle, Del. 19720

Filed Dec. 20, 1982, Ser. No. 450,985
Int. Cl.³ B25G *1/08*
U.S. Cl. 145—62 **5 Claims**

1. A screwdriver having a shaft and a handle and magnetic holding means mounted at the work end of said shaft for removably holding metal screwdriver bits, and storage means in said handle for storing a plurality of bits, said storage means comprising:

a plurality of through-going bores in said handle transversely oriented with respect to the longitudinal axis of said screwdriver, in which bores resilient sleeves are affixed which, when affixed in said handle bores, have internal diameters slightly smaller than the bits stored therein, said bits being stored within said sleeves such that the longitudinal axes of the bits are also transversely oriented with respect to the longitudinal axis of the screwdriver, i.e. the long axes of the stored bits correspond to the long axes of the through-going bores and sleeves,

the handle of said screwdriver having a width substantially equal to the length of said bits,

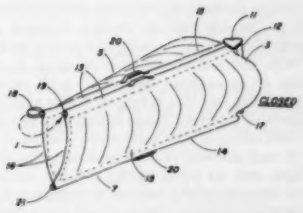
whereby, when one of the stored bits is desired for use, the user removes the bit previously used from said magnetic holding means and presses said bit into the opening of the sleeve holding the desired bit, thereby freeing the desired bit and, at the same time, storing the bit previously used, following which the desired bit is affixed to said magnetic means.

4,434,829

COLLAPSIBLE YARD PAN

Robert L. Barnard, 8924 Cheltonham Pl., Annandale, Va. 22003

Filed Aug. 26, 1981, Ser. No. 296,567
Int. Cl.³ B65B *67/12*; B65D *77/00*
U.S. Cl. 150—49 **4 Claims**



1. A collapsible, portable yard pan container comprising a filling end and a closed end opposite and spaced apart from the filling end; a filling side extending from the filling end to the closed end and a closed side opposite and spaced apart from the filling side; pliable sheet enclosure means secured to frame means, the sheet enclosure means of a strength sufficient for holding material to be contained and extending about the closed end and about the closed side and adapted to form a pocket-like enclosure, the frame means comprising a plurality of elongated, relatively rigid, rod-like primary filling side frame means extending along the filling side and defining a filling side opening, the primary side frame means being of sufficient rigidity to prevent unwanted casual closing of the container; the primary side frame means converging at a mutual hinge point at the closed end and adapted to allow the container to open completely along the filling side and to close along the filling side and to open and to close along the filling end, and adapted to allow the container to be held in a vertical position with the filling side closed and the filling end open for loading or emptying material therein; the filling end, when in an open position with the filling side also open, lying in a substantially flat plane to facilitate loading and when in a

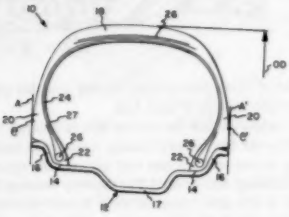
closed position securably containing any material therein and additionally comprising a plurality of elongated open end frame means converging at a second hinge point and adapted to facilitate filling of the yard pan and at least one elongated bottom frame member extending between the second hinge point and a third hinge point at the closed end.

4,434,830

PNEUMATIC TIRE

Samuel P. Landers, Uniontown, and William E. Egan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 9, 1983, Ser. No. 473,840
Int. Cl.³ B60C *11/00, 13/00, 15/00*
U.S. Cl. 152—209 R **15 Claims**



1. A pneumatic tire that is mountable upon a correspondingly sized rim having retaining flanges at each axial end thereof, said tire comprising a circumferentially extending tread portion with a sidewall extending radially inwardly from each axial edge of the tread portion to an annular bead portion that is disposed adjacent to a retaining flange when the tire is mounted upon said rim; a radial cross section of said tire having an external contour on each side of its mid-circumferential plane, when the tire is mounted upon said rim and inflated to its design inflation pressure but not subjected to a load, exclusive of indicia on the sidewalls or traction elements of the tread, that extends continuously axially outwardly and radially inwardly from said mid-circumferential plane to the point of intersection of an external surface of each sidewall with a radially extending line that is tangent to the axially outer edge of the respective retaining flange of said rim, said tread portion having a first radius of curvature and a portion of the external contour of each sidewall at least approximating the curvature of an ellipse, and no point on the external surface of either sidewall is disposed axially outwardly of the axially outer edge of the respective retaining flange of said rim a distance greater than two percent of the axial distance between the axially outer edges of the retaining flanges of said rim.

2. A pneumatic tire suitable for mounting upon a rim having a pair of axially spaced apart annular mounting surfaces, with a predetermined nominal diameter, and a retaining flange adjacent to each mounting surface, said tire comprising a circumferentially extending tread portion having a maximum outside diameter at the mid-circumferential plane of the tire and a sidewall extending radially inwardly from each axial edge of the tread portion, a radial cross-section of the portion of said tire that is disposed radially outwardly of the retaining flanges of said rim when said tire is mounted upon said rim and inflated to its design inflation pressure, but not subjected to a load, having an external contour on each side of said mid-circumferential plane, exclusive of indicia on the sidewalls or traction elements of said tread portion, from said maximum outside diameter to the intersection of an external surface of each sidewall with a radially extending line that is tangent to the axially outer edge of the respective retaining flange that is substantially determined by the steps of:

(a) drawing a first pair of straight lines, A and A^1, both of which are perpendicular to the axis of rotation of said tire, line A being tangent to the axially outer extent of one of the retaining flanges of said rim and line A^1 being tangent to the axially outer extent of the other retaining flange of said rim;

(b) drawing a straight line B which is perpendicular to the axis of rotation of said tire and is located midway between lines A and A^1;

(c) striking a circle arc having a predetermined radius r with its center located on line B radially inwardly of the mounting surfaces of said rim, said circle arc being symmetrical with respect to line B and intersecting line B at a point located radially outwardly of said mounting surfaces a distance equal to one-half of the difference between the maximum outside diameter of the tread portion of the tire and the nominal diameter of said mounting surfaces, the end of said circle are located on the same side of line B as line A being point c, and the end of said circle are located on the same side of line B as line A^1 being point c^1, the axial distance between points c and c^1 being no more than one-half of the axial distance between lines A and A^1; and

(d) locating a pair of points e,e^1, one of the points e of said pair being located on line A and the other point e^1 of said pair being located on line A^1, said pair of points e,e^1 being located radially outwardly of the radially outermost extent of said retaining flanges a distance no greater than one-half of the difference between the maximum outside diameter of the tread portion of the tire and the nominal diameter of mounting surfaces of the rim; and

(e) drawing a pair of curved lines each of which at least approximates the curvature of an ellipse, one of said curved lines being tangent to the circle arc at point c and intersecting line A at point e, and the other curved line being tangent to the circle arc at point c^1 and intersecting line A^1 at point e^1;

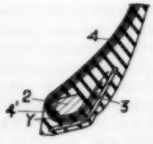
and no point on the external surface of either sidewall is disposed axially outwardly of the axially outer extent of the respective retaining flange of said rim a distance greater than two percent of the axial distance between the axially outer extents of the retaining flanges of said rim.

4,434,831

TUBELESS TIRES FOR TRUCKS AND BUSES

Yukihisa Uemura, Nara, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 170,873, Jul. 21, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 344,075
Claims priority, application Japan, Jul. 19, 1979, 54-91941
Int. Cl.³ B60C *9/08, 15/00, 15/06*
U.S. Cl. 152—356 R **3 Claims**



1. A tubeless tire for mounting on a wheel rim of a large vehicle such as a truck or a bus, said tire comprising:

a carcass structure including a plurality of radial carcass plies of polyester cords having a fineness of no less than 4500 denier and rubber material surrounding said plies;

said carcass structure including circumferentially extending beads adapted to abut a wheel rim to mount thereon said carcass structure;

each said bead including a radially inner bead base for sealingly contacting the wheel rim when said carcass structure is mounted thereon, a bead core at a position radially outwardly of said bead base, and an inner-bead portion extending radially from said bead core to said bead base;

all of said plies except one said ply having end portions turned up around said bead core and extending through said inner-bead portion, and said one ply having an end portion terminating adjacent said bead core without being turned up around said bead core and without extending through said inner-bead portion; and

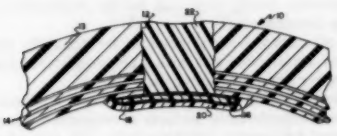
said inner-bead portion having a compressibility, between an unmounted condition and a condition mounted on a wheel rim, of 15 to 20% of the total thickness of said inner-bead portion including said ply end portions and rubber material therearound and of 30 to 35% of the thickness of said rubber material only.

4,434,832

ROOM TEMPERATURE CURABLE TIRE PATCH

Russell W. Koch, Hartville, and William W. Barbin, Massillon, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 21, 1983, Ser. No. 477,452
Int. Cl.³ B60C *21/00*
U.S. Cl. 152—370 **19 Claims**



1. A repaired elastomer article, comprising:

the elastomer article, said article having a hollow therein;

a cured gum rubber disposed within the said hollow and filling it thereby;

a treating agent applied to the inner surface of said article immediately surrounding said filled hollow, said treating agent selected from the group consisting of: N-halohydantoins, N-haloamides, N-haloimides, and combinations thereof;

an amine curable polymer or prepolymer applied over the treated surface of said article; and

an elastomeric patch positioned over said polymer or prepolymer;

wherein said polymer of prepolymer is cured in situ at room temperature wherein said patch has a coating of the treating agent on its inner surface; and

wherein said elastomer article is cured and unsaturated.

10. A process for repairing an elastomer article having a hollow therein, comprising:

filling the hollow with a gum rubber;

curing said gum rubber;

applying a treating agent to the inner surface of the article immediately surrounding the filled hollow;

applying a quantity of amine curable polymer or prepolymer over the treated surface of said article;

applying a treating agent to the surface of an elastomeric patch and positioning said patch over said polymer or prepolymer; and

curing said polymer or prepolymer at room temperature;

wherein said treating agent is selected from the group consisting of: N-halohydantoins, N-haloamines, N-haloimides, and combinations thereof.

4,434,833

AXLE WHEEL END ASSEMBLY

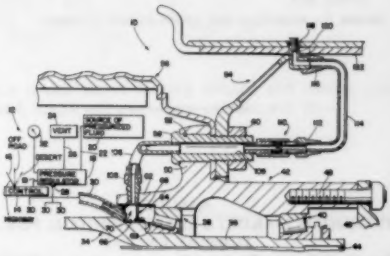
Glen E. Swanson, Euclid, and Larry A. Garstick, Chardon, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 21, 1982, Ser. No. 370,656
Int. Cl.³ B60C *29/00*
U.S. Cl. 152—417 **10 Claims**

1. An axle wheel end assembly for vehicles having an onboard tire inflation system, said wheel end assembly comprising:

an axle housing having an outboard generally annular spindle end,

a wheel hub surrounding said spindle end and rotatably supported thereon by bearing means, said hub including a radially outwardly extending flange portion adapted to mount a wheel assembly including a tire rim, said hub including an annular sleeve portion extending axially inboardly from said bearing means and having an annular inner diameter surface concentric with and spaced radially from the axially aligned outer diameter surface of said spindle to define an inboardly opening annular space therebetween,



a rotary seal assembly received entirely in said inboardly opening annular space, said rotary seal assembly defining a sealed annular fluid chamber located entirely in said annular space,

inlet means to said chamber for fluidly connecting said chamber to said inflation system,

outlet means from said chamber for connection to a fluid conduit,

fluid conduit means connected at one end to said outlet means and at the other end thereof to an aperture in said tire rim located outboard of said hub flange portion, said conduit extending generally axially through said hub flange portion, and

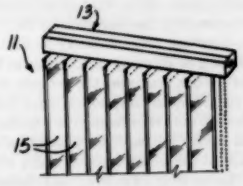
a manually operable open/close valve located in said conduit outboard of said hub flange portion for selectively isolating the interior of said tire rim from said chamber.

4,434,834

VERTICAL LOUVER SYSTEM

John P. Eanes, 43761 Mandarin Dr., Hemet, Calif. 92343

Filed Aug. 17, 1981, Ser. No. 293,447
Int. Cl.³ E06B *9/26*
U.S. Cl. 160—166 A **9 Claims**



1. A vertical louver system comprising:

a plurality of vertical louvers;

means for mounting said vertical louvers on said vertical louver supporting system;

at least one of said vertical louvers including a channel and a panel-like insert;

said channel including first and second flanges and a web

joining said flanges, said first flange and said web defining a first elongated receiving zone and said second flange and said web defining a second elongated receiving zone;

said insert being curved in transverse cross section when the insert is in an unrestrained condition;

said insert being resilient and having sufficient rigidity such that it has a tendency to bend into a relatively sharp curve about a transverse axis with snap action in response to bending loads about such axis and said channel tending to bend about a tranverse axis into a more gradual curve in response to bending loads about such axis whereby said insert and said channel have different bending characteristics when bent separately about a transverse axis;

said insert being received in said first and second receiving zones; and

means for attaching said insert to said channel.

4,434,835

METHOD OF MAKING A BLADE AEROFOIL FOR A GAS TURBINE ENGINE

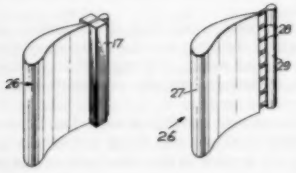
Kenneth Willgoose, Findern, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 9, 1982, Ser. No. 356,506

Claims priority, application United Kingdom, Mar. 25, 1981, 8109314

Int. Cl.³ B22C *7/02, 9/04*

U.S. Cl. 164—34 **7 Claims**



1. A method of making a blade aerofoil for a gas turbine engine, the aerofoil having cooling air exit passages therein, including the steps of forming a disposable piece having holes therein of the same form as the exit passages, locating the disposable piece in a die having a first internal cavity portion of the shape of the cavity within the blade aerofoil with which the passages will communicate, a second cavity portion in which fits the disposable piece, and a third cavity portion providing a channel interconnecting the free ends of the holes in the disposable piece, injecting ceramic slurry to fill the three cavity portions, hardening or allowing the ceramic to harden, separating the parts of the die, removing the ceramic core thus formed from the die, removing the disposable piece from the ceramic, placing the ceramic core thus formed in a further multi-part die having a main cavity whose form is substantially that of the external surface of the blade aerofoil and a secondary cavity within which the ceramic form from said channel portions fits, injecting wax to fill the main cavity within the die, allowing the wax to solidify, removing the wax pattern thus formed from the die, forming a shell of ceramic on the outer surface of the pattern, the ceramic shell engaging with the channel portion of the ceramic core, removing the wax from the ceramic shell, pouring molten metal into the shell mould thus formed, allowing the metal to solidify and removing the ceramic mould and the core from the cast blade aerofoil.

4,434,836

CONTINUOUS CASTING APPARATUS

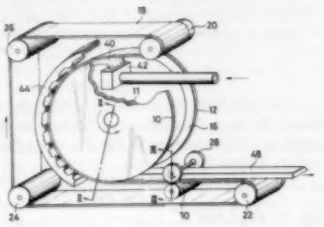
Eisuke Niiyama, and Hideyo Kodama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,916

Claims priority, application Japan, Jun. 4, 1980, 55-74347

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—429 **23 Claims**



1. Continuous casting apparatus for the production of cast metal strip comprising:

a pair of casting wheels mounted for coaxially rotating around a horizontal axis with a certain distance between respective opposing faces of said wheels;

an endless metallic belt which is trained semi-annularly around circumferential surfaces of respective wheels and mounted for moving synchronously with said wheels to define a mold space therebetween;

cooling means for spraying cooling fluid around said belt from a side opposite to said wheels; and

nozzle means arranged to inject molten metal upwardly into an upper portion of the mold space, thereby the molten metal injected is continuously solidified while radially pressed against the bottom of the mold space by centrifugal force and withdrawn from the mold space as a cast metal strip with the rotational movement of said wheels and belt.

4,434,837

PROCESS AND APPARATUS FOR MAKING THIXOTROPIC METAL SLURRIES

Joseph Winter, New Haven; Jonathan A. Dantzig, Hamden, and Derek E. Tyler, Cheshire, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 15,250, Feb. 26, 1979, abandoned. This application Feb. 24, 1983, Ser. No. 469,486

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—468 **23 Claims**

1. In an apparatus for continuously or semi-continuously forming a semi-solid thixotropic alloy slurry, said slurry comprising throughout its cross section degenerate dendrite primary solid particles in a surrounding matrix of molten metal, said apparatus comprising:

means for containing molten metal, said containing means having a desired cross section;

means for controllably cooling said molten metal in said containing means; and

means for mixing said molten metal for shearing dendrites formed in a solidification zone as said molten metal is cooled for forming said slurry;

the improvement wherein said mixing means comprises:

a single two pole stator for generating a non-zero rotating magnetic field which moves transversely of a longitudinal axis of said containing means across the entirety of said cross section of said containing means and over said entire solidification zone, said moving magnetic field providing a magnetomotive stirring force directed tangentially of said containing means for causing said molten metal and slurry to rotate in said containing means, said magnetomotive

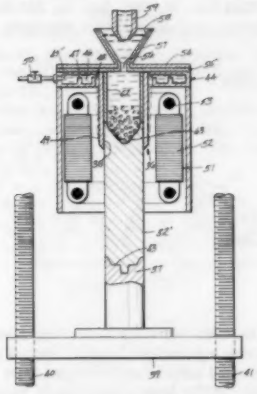
force being of sufficient magnitude to provide said shearing of said dendrites, said magnetomotive force providing a shear rate of at least 500 sec.$^{-1}$.

14. In a process for continuously or semi-continuously forming a semi-solid thixotropic alloy slurry, said slurry comprising throughout its cross section degenerate dendrite primary solid particles in a surrounding matrix of molten metal, said process comprising:

providing a means for containing molten metal having a desired cross section;

controllably cooling said molten metal in said containing means; and

mixing said contained molten metal for shearing dendrites



formed in a solidification zone as said molten metal is cooled for forming said slurry;

the improvement wherein said mixing step comprises:

generating solely with a two pole stator a non-zero rotating magnetic field which moves transversely of a longitudinal axis of said containing means across the entirety of said cross section of said containing means and over said entire solidification zone, said moving magnetic field providing a magnetomotive stirring force directed tangentially of said containing means for causing said molten metal and slurry to rotate in said containing means, said magnetomotive force being of sufficient magnitude to provide said shearing of said dendrites, said magnetomotive force providing a shear rate of at least 500 sec.$^{-1}$.

4,434,838

APPARATUS AND PROCESS FOR COOLING AND SOLIDIFYING CONTINUOUS OR SEMI-CONTINUOUSLY CAST MATERIAL

Peter E. Sevier, Woodbridge, Conn., assignor to Olin Corporation, New Haven, Conn.

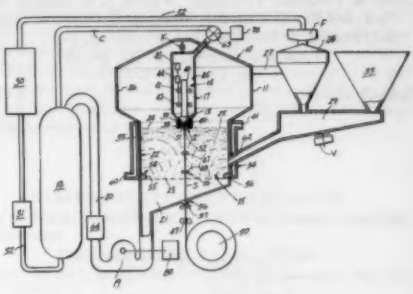
Filed Jun. 10, 1981, Ser. No. 272,132

Int. Cl.^{3} B22D *11/124*

U.S. Cl. 164—485 **26 Claims**

1. A process for casting material comprising: pouring said material into a casting means defining a casting zone, and applying a fluidized bed of particles to cool said material; the improvement comprising:

enhancing a flow of said fluidized bed particles toward said casting zone, said flow enhancing step comprising gener-



ating sound waves moving toward said casting zone which act on said particles to enhance said flow.

4,434,839

PROCESS FOR PRODUCING METALLIC SLURRIES

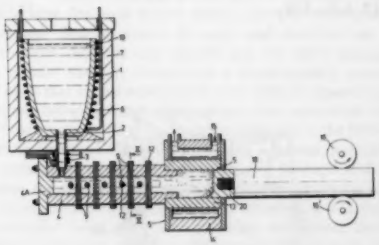
Alfredo Vogel, Malvern, England, assignor to Secretary of State in her Brtannic Majesty's Government of the United Kingdom, London, England

Continuation of Ser. No. 96,414, Nov. 21, 1979, abandoned. This application Aug. 12, 1982, Ser. No. 407,481

Claims priority, application United Kingdom, Nov. 27, 1978, 46197/78

Int. Cl.^{3} B22D *11/124, 11/10, 1/00*

U.S. Cl. 164—485 **5 Claims**



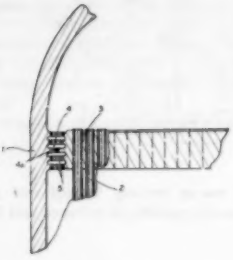
1. A process for forming shaped articles from a metallic material comprising flowing molten metallic material as a confined stream; heat insulating the external surface of the confined stream; abstracting heat evenly from within and across the body of the heat insulated stream by interrupting the flow of the stream by a plurality of static stirring elements positioned transverse to the stream to produce turbulent flow within the stream, at least one of said stirring elements being a thermal conductor for cooling the interrupted flow such that a solid phase is precipitated from said stream in the form of particles having a fine equiaxed grain structure; and casting the stream outflowing from said static stirring elements such that it solidifies with a substantially non-dendritic microstructure.

4,434,840

EXPANSION JOINT FOR REACTOR OR HEAT EXCHANGER

Janek S. Porowski, Pittsburgh; William J. O'Donnell, Bethel Park, and Ray G. Fasiczka, Mckeesport, all of Pa., assignors to O'Donnell & Associates Inc., Pittsburgh, Pa.

Filed Jul. 24, 1981, Ser. No. 286,687
Int. Cl.³ F28F 7/00
U.S. Cl. 165—82 2 Claims



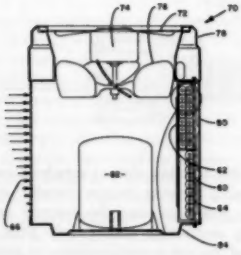
1. Apparatus for use as a heat exchanger, reactor, or steam boiler, comprising a substantially cylindrical metallic shell, a metallic tube sheet inside of and at right angles to said shell and supporting the end portion of a plurality of tubes extending in parallel with the axis of said shell, and a multi-ply expansion joint of thin straight metallic layers extending entirely within said shell and in the plane of said tube sheet at right angles to said shell in closely spaced parallel relationship and connecting the perimeter of said tube sheet to said shell by welds, whereby the layers of said joint may bend only substantially parallel to accommodate only axial displacements between the shell and tubes without excessive stresses in the tube sheet.

4,434,841

VARIABLY SPACED WRAPPED FIN HEAT EXCHANGER

Dale Jackson, Clay, and John R. McManus, Marcellus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,378
Int. Cl.³ F24B 1/06
U.S. Cl. 165—125 11 Claims



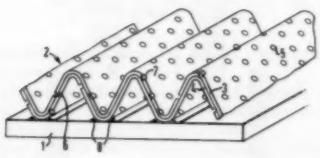
1. A wrapped fin heat exchanger made from wrapped fin tubing including a tubular fluid conducting portion and a fin portion wrapped about the tubular portion to promote heat transfer to a gas flowing thereover, said heat exchanger having the gas forced through the heat exchanger by a fan mounted adjacent one end of the heat exchanger, said fan acting to draw varying volumes of air through the heat exchanger at different locations depending upon the distance between the location and the fan, which comprises a plurality of loops of tubing arranged to form the heat exchanger, a first portion of said loops being spaced closely to impede the flow of the gas therethrough and a second portion of said loops being spced less closely than the first portion, said portions being located with the first portion being in a higher gas volume location and the second portion being in a lower gas volume location.

4,434,842

PLATE FIN HEAT EXCHANGER

Edward J. Gregory, Wolverhampton, England, assignor to IMI Marston Limited, Wolverhampton, England

Filed Nov. 24, 1981, Ser. No. 324,568
Claims priority, application United Kingdom, Dec. 2, 1980, 8038639
Int. Cl.³ F28F 3/06, 13/00
U.S. Cl. 165—133 16 Claims



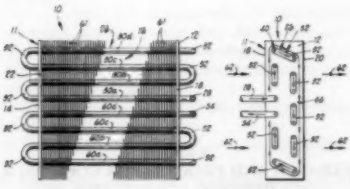
1. A plate fin heat exchanger for boiling a liquid, the heat exchanger having a plurality of stacked spaced plates of fluid impervious material adapted and arranged to be heated in use on the first side and to have a liquid to be vaporized on the second side, the second sides of adjacent plates facing each other, there being located between adjacent second sides at least one fin extending, in use, into the liquid to be vaporized, the fin being a separate item formed separately from the plates, wherein the improvement comprises the fin being of at least two layers at least in part having a small gap therebetween, one at least of the outer layers having a plurality of holes therein.

4,434,843

HEAT EXCHANGER APPARATUS

Arthur L. Alford, Oklahoma City, Okla., assignor to International Environmental Manufacturing Co., Oklahoma City, Okla.

Filed Apr. 17, 1978, Ser. No. 896,708
Int. Cl.³ F28F 1/32
U.S. Cl. 165—150 3 Claims



1. In a heat pump apparatus in which a refrigerant is selectively passed in one direction and in an opposite direction through a heat exchanger having air passed therethrough, an improved heat exchanger comprising:

a frame having an air flow channel through which the air is passed; and

a heat exchange coil supported by the frame and forming a first coil row and at least one other coil row subsequent to the first coil row, the coil rows disposed in the air flow

channel such that entering air first contacts the first coil row and then the subsequent coil row, the coil characterized as having a first end portion, a medial portion, and a second end portion, the first end portion and the second end portion substantially disposed in the first coil row such that the first end portion and the second end portion are each in a heat exchange relationship with air entering the air flow channel, and the medial portion substantially disposed in at least one coil row subsequent to the first coil row, one of the first and second end portions serving as the entering portion for the refrigerant flow, and the other one of the first and second end portions serving as a final heat conditioning stage for the exiting refrigerant.

4,434,844

CROSS-FIN COIL TYPE HEAT EXCHANGER

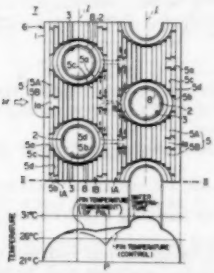
Katsumi Sakitani, Kawachinagano; Shigehiro Uemura, and Ryuzaburo Yajima, both of Sakai, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 4, 1981, Ser. No. 289,978

Claims priority, application Japan, May 15, 1981, 56-70724[U]; May 29, 1981, 56-82986; Jul. 16, 1981, 56-111770; Jul. 16, 1981, 56-111771

Int. Cl.³ F28F *1/32*

U.S. Cl. 165—151 **7 Claims**



1. A heat exchanger comprising:

fin units (6) each comprising a convoluted fin base plate (1) which is formed with a multiplicity of apertures (3) arranged parallel to the ridges of the convolutions in a plurality of rows with the apertures (3) of the adjacent rows being staggered, a multiplicity of slits (4) of a small width arranged parallel to a straight line 1 interconnecting the centers of the apertures (3) of the same row and substantially parallel to one another in a manner to surround the aperture (3) with no slits being formed in the vicinity of each aperture (3), and a multiplicity of louver type raised fins (5) formed by raising the material adjacent to one slit in such a manner that in each raised fin (5) two shorter sides (5*a* and 5*b*) on the side of the apertures (3) are connected to the fin base plate (1) and one of longer sides (5*c* and 5*d*) is held on the surface of the fin base plate (1); and

a multiplicity of heat exchange medium tubes (2) each inserted in the surfaces of apertures (3) of a plurality of said fin units (6) to provide a cross-fin coil;

wherein said raised fins (5) are successively formed without a base plate portion between the adjacent raised fins (5) and with each fin having a planar surface inclined with respect to the surface of the fin base plate (1);

wherein a current of air (w) is caused to flow between the fin units (6) of the cross-fin coil (7) in a direction substantially perpendicular to the slits (4), and the convolutions of each said fin base plate (1) are inclined with respect to the direction of flow of the air current (w) while said raised fins (5) are raised and inclined in a direction opposite to the direction of inclination of the convolutions of the fin base plate (1); and

wherein said raised fins (5) except the raised fins (5) formed in each portion between the adjacent apertures (3) of each said row are each split into two raised fin members through a fin base plate portion (1*a*) in a direction perpendicular to the direction of flow of the air current (w), and no slits (4) are formed in the side portion (1*b*) of the adjacent heat exchanger medium tube (2) juxtaposed against the fin base plate portion (1*a*).

4,434,845

STACKED-PLATE HEAT EXCHANGER

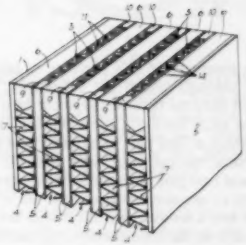
Dieter C. Steeb, Im Schönenbühl, CH-9050 Steinegg-Appenzell, Switzerland

Filed Feb. 8, 1982, Ser. No. 347,068

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3107010

Int. Cl.³ F28D *9/02*; F28F *3/06*

U.S. Cl. 165—153 **7 Claims**



3. A heat-exchanger sandwich construction for accommodating two fluids separately flowing in different directions, said construction comprising a plurality of like flat rectangular metal plates providing heat-exchange surfaces, and spacer means between adjacent plates and retaining said plates in spaced parallel relation; the spacer means between first and second successive plates of said plurality comprising a pair of parallel rail members along a first pair of opposed parallel edges of said first and second plates, thereby establishing a first-passage flow direction through said construction; the spacer means between said second and the third successive plates of said plurality comprising a longitudinally extruded metal plate that is characterized on both sides by spaced parallel grooves between longitudinal ridges, the longitudinal direction of the grooves and ridges being orthogonal to the first-passage flow direction, thereby establishing a second direction of flow orthogonal to said first direction and through said construction; the spacer means between similarly successive plates comprising further of said parallel rail members and further of said extruded metal plates in alternating succession, thereby establishing flows in said first and second directions in interlaced layers through said construction, so that each plate serves the respective fluid flows in their orthogonally related directions, and all rail members and ridges having bonded direct supporting contact with both of the adjacent plates which they space.

4,434,846

PATTERNED HEAT EXCHANGER FIN

James W. B. Lu, Greendale, Wis., assignor to McQuay Inc., Minneapolis, Minn.

Filed Apr. 6, 1981, Ser. No. 251,382

Int. Cl.³ F28D *7/00*; F28F *9/22*

U.S. Cl. 165—161 **6 Claims**

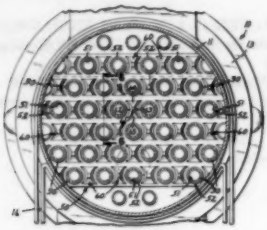
1. A heat exchanger, comprising:

a plurality of heat exchange tubes having a generally circular cross-section;

a shell;

means supporting the tubes in generally parallel relationship to one another within the shell to form a heat exchanger with a flow path for a first fluid within the tubes and a flow path for a second fluid within the shell around the tubes;

a plurality of fins positioned on the tubes to define flow paths therebetween for the second fluid, each fin comprising a member having a generally planar surface, the member



extending transversely of a plurality of tubes and having apertures through which the tubes pass, and having a plurality of patterns between adjacent tube apertures; and

said patterns each having a crest portion raised from the planar surface, a first pair of surfaces that slope from the crest portion, on opposite sides thereof, to the planar surface, said first pair of surfaces having arcuately shaped edges with an arc conforming to the arc of adjacent tube apertures, and a second pair of surfaces arcuately sloping downward from the crest portion and the edges of the first pair of surfaces to the planar surface adjacent tube apertures on either side of the pattern.

4,434,847

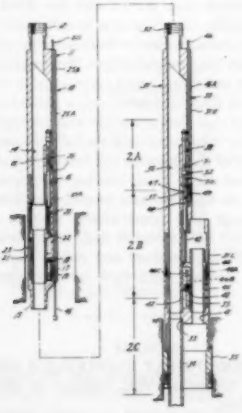
FLOW CONTROLLING APPARATUS

Gonzalo Vazquez, and Neil H. Akkerman, both of Houston, Tex., assignors to AVA International Corporation, Houston, Tex.

Filed Mar. 17, 1982, Ser. No. 358,127

Int. Cl.³ E21B *23/03, 34.14*

U.S. Cl. 166—117.5 **25 Claims**



1. Apparatus for use in controlling flow within a well bore, comprising a mandrel having a first bore therethrough adapted to be connected as part of a well tubing string, whereby it may be lowered with the string into the well bore, and a second bore therethrough parallel to the first bore for connection at its upper and lower ends with the space within the well bore about the tubing string, a closure member mounted on the mandrel for movement between positions opening and closing the second bore, means yieldably urging said closure member to closed position, said mandrel having a pocket therein to one side of the first bore and having one end opening to the first bore, a tool adapted to be run on a wire line through said tubing string and first bore into and out of the pocket, and means including fluid responsive means within said tool for moving the closure member from closed to open position.

4,434,848

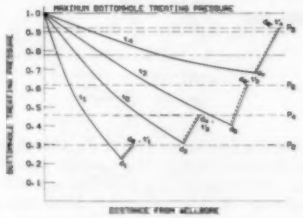
MAXIMIZING FRACTURE EXTENSION IN MASSIVE HYDRAULIC FRACTURING

Michael B. Smith, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 168,829, Jul. 10, 1980, abandoned. This application Dec. 18, 1981, Ser. No. 332,026

Int. Cl.³ E21B *43/26, 47/06*

U.S. Cl. 166—250 **9 Claims**



1. A method for fracturing a subterranean formation, comprising:

(a) injecting a fracturing fluid into said formation under fracture extending conditions until the bottomhole treating pressure approaches a maximum bottomhole treating pressure for said formation;

(b) discontinuing said injection of said fracturing fluid for a period of time (t) to allow the bottomhole treating pressure and the pressure along the created fracture to equalize; and

(c) sequentially repeating steps (a) and (b) until the bottomhole treating pressure very nearly equals the maximum bottomhole treating pressure.

4,434,849

METHOD AND APPARATUS FOR RECOVERING HIGH VISCOSITY OILS

Joseph C. Allen, Bellaire, Tex., assignor to Heavy Oil Process, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 108,815, Dec. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 940,390, Sep., 1978, Pat. No. 4,257,650. This application Feb. 9, 1981, Ser. No. 232,987

Int. Cl.³ E21B *43/24, 47/00*

U.S. Cl. 166—252 **15 Claims**

1. A method of recovering oil from a subsurface earth formation in which formation a steam cap can form comprising:

establishing a shaft hole extending from the surface to said subsurface earth formation;

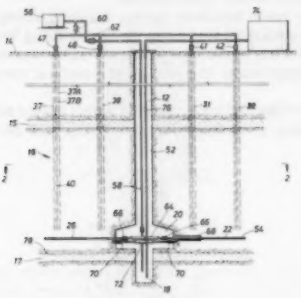
drilling a first plurality of boreholes radially from said shaft hole in a substantially horizontal plane within a lower portion of said formation, said first plurality of boreholes defining a blanketed zone;

drilling a second plurality of boreholes within the blanketed zone substantially vertically from said surface into said

formation, said second plurality of boreholes extending to a depth above said first plurality of boreholes;

heating oil in said formation by injecting a heating fluid into one of said plurality of boreholes;

injecting steam into said second plurality of boreholes to form a gas cap; and



thereafter discontinuing injection of steam through said plurality of boreholes and injecting water such that said water is converted to steam to further provide for drive of oil by said gas cap towards said first plurality of boreholes.

4,434,850

METHOD FOR DEMULSIFICATION OF BITUMEN EMULSIONS USING POLYALKYLENE POLYAMINE SALTS

David R. McCoy, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,456
Int. Cl.³ C10G *33/04*; E21B *43/24*, *43/40*
U.S. Cl. 166—267 **4 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions by adding thereto demulsifiers comprising water soluble polyamine salts prepared by contacting poly(ethyleneimines) with organic or inorganic acids wherein the polyamine salts have a molecular weight from at least about 1,000 to the water solubility limit.

4. A process for recovering bitumen from a tar sand formation comprising

injecting into the tar sand a fluid containing hot water and/or steam in order to emulsify the bitumen in the tar sand,

recovering the emulsified bitumen,

demulsifying said emulsion by adding thereto demulsifiers comprising water soluble polyamine salts prepared by contacting polyamines with organic or inorganic acids wherein the polyamine salts have a molecular weight of at least 1,000,

converting the salts of the water soluble polyamines into inactive materials by adjustment of the pH of the aqueous phase of the broken emulsion,

reinjecting the aqeuous phase into a bitumen containing formation to recover additional bitumen.

4,434,851

METHOD FOR STEAM INJECTION IN STEEPLY DIPPING FORMATIONS

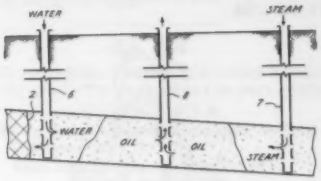
Stewart Haynes, Jr., and Donald S. Mims, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 166,658, Jul. 7, 1980, abandoned. This application May 6, 1982, Ser. No. 375,515
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **6 Claims**

1. A method for recovering petroleum from an inclined reservoir containing high viscosity petroleum comprising:

(a) injecting a thermal recovery fluid comprising steam vapor into a steam injection zone in the lower portion of the reservoir through a thermal recovery fluid injection well;

(b) injection cold water whose temperature is at least 75° F. (41.8° C.) below the temperature at which steam vapor



condenses to water liquid at formation pressure into a zone within the reservoir immediately adjacent the updip limit of the reservoir via a fluid injection well; and

(c) recovering petroleum from the formation via a production well located in a zone intermediate the wells of steps (a) and (b).

4,434,852

METHOD OF ENHANCED OIL RECOVERY EMPLOYING NITROGEN INJECTION

Thomas J. Morel; Stewart Haynes, Jr., and Jack H. Park, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,805
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **8 Claims**

1. A method for the recovery of oil from a subterranean oil reservoir having a dip of at least 10 degrees and penetrated by spaced injection and production systems, comprising:

(a) injecting into said reservoir via said injection system at a location up dip from said production system, a first fluid comprising a mixture of nitrogen and from 2.0 to 20.0 percent by volume light hydrocarbon at rate sufficient to produce a flow velocity in said reservoir which is less than a critical velocity, V_c, as defined by the relationship:

$$V_c = \frac{2.741\ \kappa\Delta\rho\ \mathrm{Sin}\alpha}{\phi\Delta\mu}$$

wherein:

V_c is the critical velocity in feet per day,

κ is the permeability of the reservoir in darcies,

ϕ is the fractional porosity of the reservoir $=\phi r(1-S_{wr}-S_{or})$,

ϕr is the porosity of the reservoir,

S_{wr} is the residual water saturation,

S_{or} is the residual oil saturation,

α is the dip angle of the reservoir in degrees,

$\Delta\rho$ is the density differential between the displaced, fluid and the displacing fluid in grams per cubic centimeter, and

$\Delta\mu$ is the viscosity differential between the displaced fluid and the displacing fluid in centipoises;

(b) thereafter, injecting into said reservoir via said injection system a predominantly nitrogen containing gas at a rate to produce a flow velocity which is also less than said critical velocity defined above and in an amount sufficient to strip previously injected light hydrocarbon from said reservoir oil to form a transition zone of conditional miscibility; and thereafter

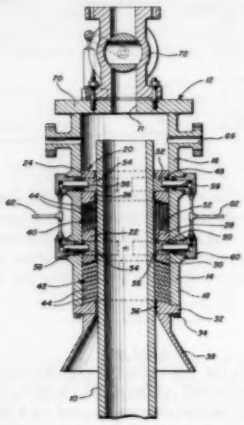
(c) injecting a driving fluid into said reservoir via said injection system to drive said transition zone through said reservoir and displace oil to said production system and,

(d) recovering oil from said production system.

4,434,853
OIL WELL BLOW OUT CONTROL VALVE

Dale M. Bourgeois, Houma, La., assignor to Wayne Bourgeois and LeRoy Hebert, both of Houma, La., part interest to each

Filed Jun. 11, 1982, Ser. No. 387,510
Int. Cl.³ E21B *33/068*
U.S. Cl. 166—285 **13 Claims**



10. The method of forming a fluid-tight seal between the upper end of a production tubing and the inner surfaces of a blow out control valve assembly cylindrical housing portion downwardly loosely telescoped over the upper end portion of the production tubing and wherein the cylindrical housing portion includes three axially spaced circumferential and radially inwardly projecting annular abutments sealingly and rigidly mounted therein, providing an annular axially compressible and radially expandable seal assembly between each pair of adjacent annular abutments, and introducing a fluent hardenable seal material under pressure into said cylindrical housing portion in an area thereof disposed intermediate said seal assemblies, whereby to pressurize said seal assemblies from adjacent sides thereof.

4,434,854
PRESSURE ACTUATED VENT ASSEMBLY FOR SLANTED WELLBORES

Roy R. Vann; George W. Ribble, and Flint R. George, all of Houston, Tex., assignors to Geo Vann, Inc., Houston, Tex.

Continuation of Ser. No. 166,547, Jul. 7, 1980, Pat. No. 4,330,039. This application May 14, 1982, Ser. No. 378,155
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ E21B *34/10, 43/117, 43/12*
U.S. Cl. 166—386 **10 Claims**

1. A vent assembly in combination with a packer and perforating gun suspended on a tubing string into a cased borehole with an open axial passageway extending from the perforating gun to the surface for the lowering of a bar to detonate the perforating gun and for the flow of production fluids through the vent assembly to the surface, comprising:

a tubular body series connected in the tubing string and having a portion of the axial passageway extending therethrough;

a sleeve disposed on said body forming an annular chamber;

piston means received within said annular chamber;

ports through said body and piston means,

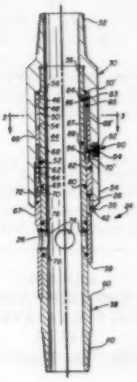
said piston means being movable between an open position where said ports allow fluid flow between said axial passageway and borehole and a closed position where fluid flow is prevented;

guide means disposed on said piston means for bringing said ports into registry in said open position; and

means communicating one portion of said piston means with said axial passageway and another portion of said piston means with the borehole whereby a sufficient pressure differential between said axial passageway and borehole will cause said piston means to move from said closed position to said open position.

7. In a cased borehole having a tubing string suspended therein, a packer located along the tubing string for closing the casing annulus, and a vent assembly series connected in the tubing string below the packer, the method comprising the steps of:

(1) providing the vent assembly with a ported tubular body, forming an annular chamber within the said body and



slidably mounting a ported sleeve within the annular chamber;

(2) closing the port through the body and thus the axial passageway of the tubular string to the flow of fluids from the casing annulus by sliding the ported sleeve to a closed position where the ports are nonaligned;

(3) lowering the tubing string, packer and vent assembly into the cased borehole in the closed position;

(4) effecting a pressure differential between the axial passageway of the tubing string and the casing annulus by elevating the pressure within the axial passageway; and

(5) using the pressure differential of step (4) to force the sleeve to slide into the open position where the ports are aligned to immediately open a flow path allowing the flow of fluids from the casing annulus, through the ports and axial passageway, and up to the surface.

4,434,855
SPRINKLER VALVE

George R. Given, Jr., Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1982, Ser. No. 363,692
Int. Cl.³ A62C *37/08*
U.S. Cl. 169—37 **3 Claims**

1. A sensor controlled valve for a pressurized sprinkler system which allows the valve to be tested for flow without activating the sprinkler system, comprising:

a valve body;

an inlet in the body, said inlet introducing pressurized fluid to the valve;

an outlet in the body;

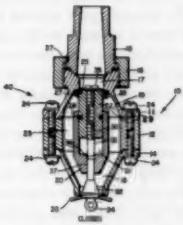
a flow passage connecting the inlet and the outlet;

a cylinder mounted in the flow passage;

a piston mounted in the cylinder so as to form a fluid pressure chamber with the cylinder, the chamber adapted to

receive a control fluid, and the pressure within said chamber being sensor controlled to allow the piston to open and close the inlet;

a stem mounted in the outlet extending through the cylinder and pressure chamber and connected to the piston for withdrawing the piston from the inlet;



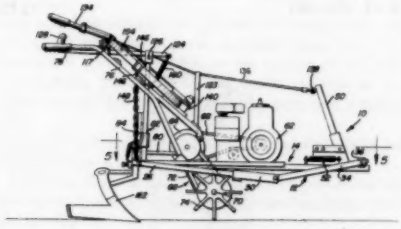
a stem extension provided to the stem such that the stem extension projects from the outlet outside of the valve body to allow the piston to be withdrawn from the inlet from a position external to the valve.

4,434,856

GARDEN PLOW WITH SUPPORT MEANS OPERATIVE TO INVERSELY ANGULARLY DISPLACE EARTHWORKING TOOL

John H. Crane, deceased, late of Heflin, Ala., and Foy Aline Crane, executrix, Rte. 3, Heflin, Ala. 36264

Filed Sep. 9, 1981, Ser. No. 300,492
Int. Cl.³ A01B *3/50*; B62D *51/04*
U.S. Cl. 172—256 **2 Claims**



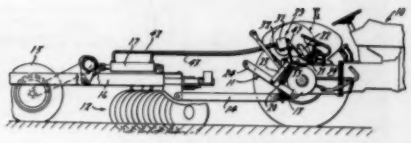
2. A garden plow including a longitudinal main frame and a longitudinal motor and drive frame, mounting means mounting said main frame from said motor and drive frame for oscillation about an upstanding axis spaced intermediate the opposite ends of said main frame, said motor and drive frame including motor driven ground-engageable support and drive means mounted thereon, means operative to releasably retain said main frame in predetermined angularly displaced position about said upstanding axis relative to said motor and drive frame, said main frame including support means for supporting earthworking tool means therefrom, said mounting means also including means for supporting said main frame from said motor and drive frame for oscillation about a horizontal central axis extending longitudinally of said motor and drive frame and angularly displaceable about said upstanding axis with said main frame relative to said motor and drive frame, said motor and drive frame including means operative to releasably retain said main frame in predetermined adjusted angularly displaced positions about said horizontal axis relative to said motor and drive frame, said support means for supporting earthworking tool means from said main frame including means for mounting said tool means from said main frame for angular displacement about a horizontal axis extending longitudinally of said main frame, and means operatively connected between said motor and drive frame and said earthworking tool means support means operative to inversely angularly displace said earthworking tool means support means relative to said main frame in response to angular displacement of said main frame relative to said motor and drive frame.

4,434,857

TRACTOR AND IMPLEMENT COUPLED THERETO WITH HYDRAULIC LIFT SYSTEM INCLUDING PHASING VALVE

Habil S. Basrai, Port Huron, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 2, 1981, Ser. No. 317,353
Int. Cl.³ A01B *63/22*
U.S. Cl. 172—328 **4 Claims**



2. In combination, a tractor and a soil working implement coupled thereto;

the tractor having at its rear end an implement hitch and a lift means including lift arm means carried on the tractor and operatively connected for raising and lowering said hitch;

the implement being coupled at one end to said hitch and at its other end being supported on height adjusting means;

the lift means and the height controlling means each including a hydraulic cylinder means to raise or lower, respectively, the hitch and the rear end of the implement;

a source of fluid under pressure;

a valve system comprising a plurality of valve means in communication with one another;

one of said valve means including an auxiliary services valve having a valve spool positionable in a first position for directing fluid from a fluid input passageway connected to the source of fluid to a first output passageway connected to a lift valve for controlling fluid flow to the lift means hydraulic cylinder;

a second one of said valve means including a phasing valve having a valve body and a valve spool including an actuating stem portion extending out of said valve body for automatically causing both cylinders to be restored to a predetermined initial position upon a full raise signal to the hydraulic lift means being initiated by the tractor operator; and

a lever member mounted adjacent the phasing valve spool for engagement therewith and operatively connected to linkage means mounted for engagement with a portion of said lift arm, movement of said lift arm to said full raise position causing said lift arm to engage said linkage means, which causes said lever member to engage said phasing valve spool stem portion, thus effecting movement of said phasing valve spool to a position permitting said cylinder restoration.

4,434,858

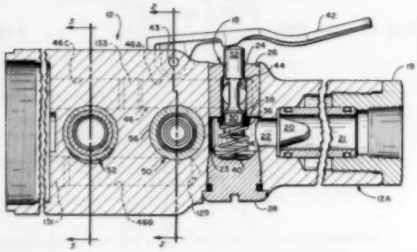
AIR TOOL WITH STALL TORQUE REGULATOR AND AIR BIASING MECHANISM

Hugh L. Whitehouse, Lyndhurst, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 18, 1982, Ser. No. 340,266
Int. Cl.³ B25B *23/14, 21/00*; B23P *19/06*
U.S. Cl. 173—12 **13 Claims**

1. An air tool comprising a housing having an air supply line

including a motor inlet passage and a valve chamber formed in the motor inlet passage, an air operated rotary motor in the housing having a normal free running no-load speed at a predetermined line pressure which decreases in speed as torque loading on the motor increases, a shut-off valve movable in the valve chamber between a normally open position and a closed position for shutting off air to the motor, a compartment being formed in the chamber at one end of the valve and directly communicating with an inlet to the motor for directing air under motor operating pressure against the valve for moving it toward said closed position, an air bias compartment being formed in th chamber at the opposite end of the shut-off valve and communicating with the air supply line upstream of the



shut-off valve chamber, the air bias compartment being connected to an air bleed passage to atmosphere, and adjustable valve means in the air bleed passage for selectively reducing the pressure in the air bias compartment, relative to a predetermined line pressure of the air supplied, for selective shut-off of air flow to the motor at a predetermined level of motor output as determined by the air pressure acting on the motor, and stall torque regulator means in the air supply line upstream of the shut-off valve chamber, the stall torque regulator means being operable in response to fluid pressure acting on the motor for establishing said predetermined line pressure of the air supplied to the motor and to the air bias compartment of the shut-off valve chamber.

4,434,859

HAMMER DRILL FOR PERFORMING ROTARY DRILLING OR PERCUSSIVE DRILLING

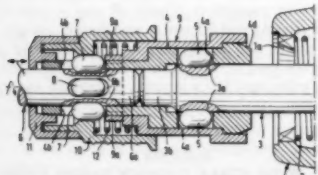
Gerhard Rumpp, Inning; Dieter Scholz, Unterpfaffenhofen, and Manfred Spieth, Martinsried, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 25, 1982, Ser. No. 392,121

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 3125454

Int. Cl.³ E02D *7/02*

U.S. Cl. 173—48 **9 Claims**



1. Hammer drill for performing percussion drilling or rotary drilling comprising a housing having a front end, a tool holder axially displaceably mounted relative to the front end of said housing and said tool holder having a front end and a rear end with the rear end disposed in supported contact with the front end of said housing when the hammer drill is arranged to perform rotary drilling, said tool holder including an axially extending retainer sleeve arranged to hold a tool shank, said retainer sleeve includes locking members engageable in axially extending closed ended recesses in the tool shank for holding the tool shank with axial play, wherein the improvement comprises centering means on the front end of said housing and on the rear end of said retainer sleeve for centering said tool holder with the rear end thereof disposed in supported contact with the front end of said housing, said locking members being uniformly angularly spaced apart around the axis of said retainer sleeve, stop means located within said tool holder for engagement with said locking members for holding said locking members against axial displacement in the recesses in the tool shank, said stop means being axially displaceable relative to said locking member and including a first stop and a second stop with said first stop being formed on said retainer sleeve, said second stop is axially displaceable relative to said retainer sleeve and can be fixed in position for securing one of said locking members between said first stop and the end of one of the recesses in the tool shank and another of said locking members between said second stop and the end of another one of the recesses in the tool shank.

4,434,860

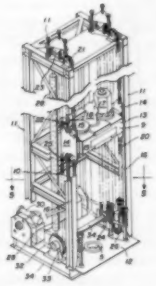
HOIST PULL DOWN SYSTEM FOR BLAST HOLE DRILL

Bruce Deyo, Columbus, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 2, 1981, Ser. No. 326,470

Int. Cl.³ E21B *15/00, 19/08*

U.S. Cl. 173—147 **12 Claims**



1. A chain-type hoist pull down system for a blast hole drill having a mast extending angularly upward from an integral drill table and a drill pipe engaging head mounted for travel along the mast, said system comprising:

a continuous chain connected at one end to the drill head to pull upward thereon and connected at its other end to the drill head to pull downward thereon, said chain being reeved intermediate its ends around idler sprockets and a drive sprocket connected to said mast, at least one of said idler sprockets being resiliently connected to said mast and effective to provide tension in said chain;

means suspended between said one idler sprocket and its resilient mounting which is selectively actuable to increase the tension in said chain; and

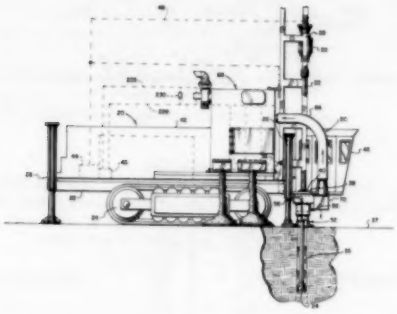
means mounted on said drill for rotating said drive sprocket in either direction.

4,434,861

DUST CONVEYING AND COLLECTING SYSTEM AND METHOD

D. Franklin Howeth, 233 Chuck Wagon Trail, Fort Worth, Tex. 76108

Filed Jan. 7, 1981, Ser. No. 223,036
Int. Cl.³ E21B 21/06; E21C 7/02
U.S. Cl. 175—66 54 Claims



32. A method for separating particulate material from an air flow stream emanating from a drillhole comprising:

providing means for receiving said flow stream and conducting said flow stream to a point removed from the vicinity of said drillhole,

providing mechanical conveying means in said receiving means;

providing means for collecting finer material from said flow stream and being in flow communication with said receiving means;

passing said flow stream through said receiving means and separating relatively coarse material from said flow stream at a point removed from the vicinity of said drillhole utilizing the inertia of said coarse material as provided by said flow stream emanating from said drillhole; and

mechanically conveying said coarse material away from said drillhole after separation from said flow stream.

33. Apparatus for conveying and collecting particulate material entrained in a moving air stream emanating from a drillhole comprising:

means for receiving said air stream and for separating relatively coarse material from finer material at a point removed from the vicinity of said drillhole utilizing the inertia of said coarse material and the velocity of said air stream entering said receiving means, said receiving means including a head member adapted to be disposed around the mouth of said drillhole and forming passage and means for directing the flow of said air stream and said particulate material without materially reducing the momentum of said coarse material;

means for collecting said finer material from said air stream without materially interfering with the separation of said coarse material; and

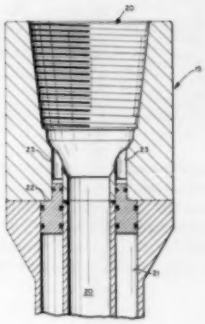
means forming an enclosure in flow receiving communication with said passage means in said head member and defining a chamber for separating said coarse material from said air stream by at least partially utilizing gravitational forces acting on said coarse material, said chamber including a material receiving hopper portion and a flow stream discharge portion, and means for discharging said material from said hopper portion in response to a change in the pressure within said hopper portion with respect to ambient atmospheric pressure.

4,434,862

DOWNHOLE TURBINE ROTARY DRILLING DEVICE

William C. Lyons, P.O. Box 2457, Santa Fe, N. Mex. 87501

Filed Jun. 4, 1981, Ser. No. 270,584
Int. Cl.³ E21B 4/02
U.S. Cl. 175—103 5 Claims



1. In a gas turbine drilling device for use in a borehole forming operation wherein means are provided for compressing and injecting gas into a drill string with drill collars attached to the downhole portion thereof, the improvement comprising:

a heat exchanger comprising an oil reservoir, said heat exchanger is housed in a collar and adapted to be removably attached to the downhole portion of the drill collars;

a gas turbine connected in underlying relationship respective to said heat exchanger;

a reduction gear means operably connected to the gas actuated turbine to thereby achieve a reduction in revolutions per minute between the output of the gas turbine and the final output of the gear reduction system, said gear reduction system being housed within a drill collar configuration and adapted to be attached to the output portion of the gas turbine;

a bit sub means removably attached to the output of said gear reduction system for operably connecting the output of said gear reduction system to a standard drill bit;

a gas passage means provided through said oil reservoir in said heat exchanger, said gas turbine engine, said gear reduction system, and said bit sub means to provide passage for gases through the system when all parts are operably connected together;

said oil reservoir in said heat exchanger contains lubricating oil and includes means for urging lubricating oil retained within said oil reservoir to flow to the working parts of the gas turbine engine and the reduction gearing system when the drilling system is operably connected;

means for returning the lubricating oil from the gas turbine and the reduction gearing system to the oil reservoir so as to provide continuous circulation of lubricating oil throughout the gas turbine and reduction gearing system; and

valve means responsive to gas pressure for precluding flow of oil until the pressure at said gas passage means reaches a predetermined magnitude.

4,434,863

DRILL STRING SPLINED RESILIENT TUBULAR TELESCOPIC JOINT FOR BALANCED LOAD DRILLING OF DEEP HOLES

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 38,674, May 14, 1979, Pat. No. 4,281,726. This application Dec. 16, 1980, Ser. No. 216,832
Int. Cl.³ E21B 17/00
U.S. Cl. 175—321 57 Claims

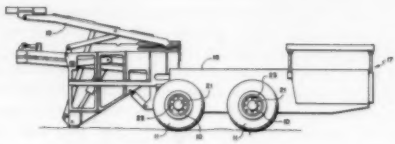
1. Well tool comprising
a tubular barrel,
a tubular mandrel axially slideably disposed in the barrel,
spline means to transfer torque between the barrel and mandrel,
means on the barrel at one end of the tool adapted for connection to a rotary drilling member,
means on the mandrel at the other end of the tool adapted for connection to a rotary drilling member,
stop means on the barrel and mandrel limiting relative axial movement thereof,
first double anchored seal means between the barrel and mandrel sealing against flow of fluid between the interior of the tool and the annular clearance between the barrel and mandrel, while allowing relative axial motion between said barrel and mandrel,
second double anchored seal means between the barrel and mandrel sealing against the flow of fluid between the exterior of the tool and said annular clearance between the barrel and mandrel while allowing relative axial motion between said barrel and mandrel, and
sliding pressure seal means between said first and second double anchored seal means sealing against the flow of fluid axially through said annular clearance between the barrel and mandrel while allowing relative axial motion between said barrel and mandrel,
said double anchored seal means each being annular and including a first annular periphery coaxial with and affixed to the barrel preventing relative axial and rotational movement between said first periphery and barrel, and a second annular periphery coaxial with and affixed to the mandrel preventing relative axial and rotational movement between said second periphery and mandrel, and an annular flexible portion coaxial with said first and second peripheries and flexibly interconnecting said peripheries and flexing upon relative axial motion of said peripheries while sealing therebetween,
said double anchored seal means isolating said sliding pressure seal means and preventing contamination of the sliding seal means by fluid outside the barrel and preventing contamination of the sliding seal means by fluid inside the barrel.

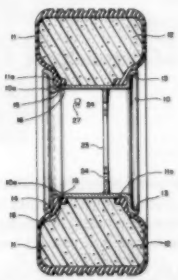
4,434,864

ROOF BOLTER VEHICLE AND WHEELS THEREFOR

Frank V. Lupo, 790 W. Price River Dr., Price, Utah 84501

Filed Feb. 16, 1982, Ser. No. 348,747
Int. Cl.³ B60B 15/00; B60C 7/24; B62D 11/00
U.S. Cl. 180—6.2 7 Claims





1. In combination with a roof-bolter vehicle for use in underground mines, which vehicle has an elongate chassis frame, front and rear sets of stub axles extending transversely of and substantially amidships the frame and providing wheel-mounting hubs laterally of the frame, and sprocket wheel and chain drive means for said axles, whereby steering of the vehicle is accomplished by driving one of the front wheels faster than the other, the features of unusually wide, rubber-tired wheels mounted on the axle hubs, respectively, each of said wheels comprising a wider than normal, circular, tire-mounting rim having overall width of substantially twelve inches and an integral peripheral flange at one side thereof; means securing a removable mounting ring as a peripheral flange at the other side thereof; a circular groove for receiving an O-ring adjacent to the mounting-ring-securing-means so as to be directly covered by the corresponding bead of a mounted, oversize tire; an axle-hub-attachment plate secured within the rim off-center inwardly thereof toward the inside peripheral flange of the rim, so as to be at substantially the normal spacing from the inside, peripheral flange of the rim; an O-ring positioned in said groove; a 14.50×15 tubeless tire, oversize for said rim, mounted on said rim and bearing unusually tightly against said rim flanges, with the bead thereof that corresponds to the O-ring directly covering and bearing against said O-ring; a plastic foam inflating said tires; and fastening means fixedly securing the axle-hub-attachment plate of each wheel to the hub of its corresponding axle of the vehicle.

4,434,865

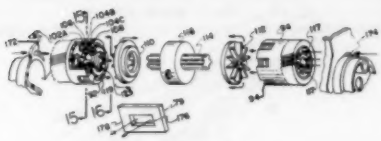
POWER TRANSMISSION FOR A CLEANER

Donald B. Tschudy, Canton, and Charles R. Morrow, Alliance, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Aug. 31, 1981, Ser. No. 298,190
Int. Cl.³ B62D 51/04
U.S. Cl. 180—19 H 11 Claims

11. A cooling system for a clutching arrangement including:
(a) a hubbed gear,
(b) a plurality of clutch disks in said hubbed gear,

(c) cooling vanes in said hubbed gear,
(d) slots through said gear permitting said cooling vanes to circulate air to said clutch disks,



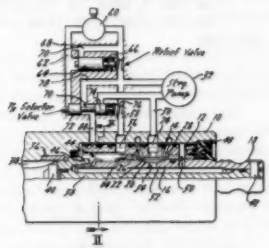
(e) said cooling vanes disposed totally within said hubbed gear, and
(f) said cooling vanes disposed adjacent said slots.

4,434,866

SPEED-SENSITIVE POWER STEERING SYSTEM

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 19, 1982, Ser. No. 396,982
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—143 **3 Claims**



1. A power steering gear mechanism for a vehicle for providing a power assist as steering torque is delivered to a steerable member from a steering shaft;
a valve mechanism having a first valve element connected to the steering shaft and a second valve element connected drivably to the steerable member;
a yieldable torsion element for transferring torque directly to the steerable member from the steering shaft;
a power steering pressure source including a pump that is adapted to be driven at a speed proportional to vehicle speed and having a pressure delivery passage and a flow return passage;
reaction pressure chambers in proximity to said valve mechanism;
pressure responsive pistons in said reaction chambers; and
valve means responsive to the pressure in said pressure delivery passage for distributing pressure from said pressure delivery passage to said reaction cylinders at high pump speeds and for connecting the flow return passage of said pump to said reaction chambers at lower pump speeds.

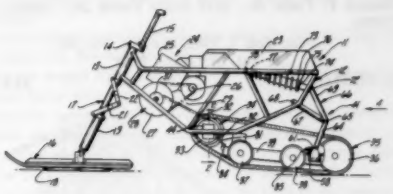
4,434,867

DRIVE BELT FOR SNOW VEHICLE AND SUSPENSION THEREFOR

James E. Grinde, Anoka, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 8, 1982, Ser. No. 347,005
Int. Cl.³ B62M *27/02*
U.S. Cl. 180—190 **11 Claims**

1. A snow vehicle having a frame, front ski means supported by said frame for steering movement, an endless drive belt, drive means for driving said drive belt, and suspension means for supporting said drive belt for suspension movement relative to said frame, said suspension means comprising a lever supported for pivotal movement about a first pivot axis on said frame, a suspension element, means including a pivotal connection between said lever and said suspension element for loading



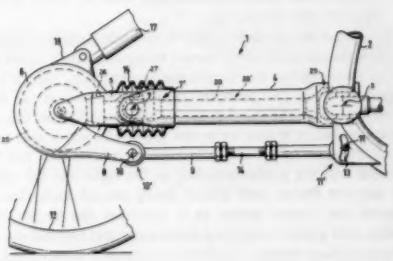
said suspension element by the pivotal movement of said lever, a link, means providing a relative pivotal connection by the one end of said link and said drive belt, and means pivotally connecting the other end of said link to said lever for pivoting said lever upon movement of said drive belt relative to said frame for loading the suspension element upon such relative movement.

4,434,868

REAR WHEEL CONTROL UNIT FOR TWO-WHEELED VEHICLES WITH UNIVERSAL DRIVE MECHANISM

Horst Brenner, Gunding, and Rene Hinsberg, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

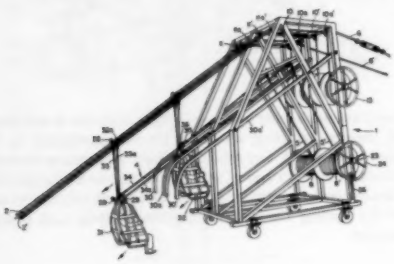
Filed Jun. 30, 1981, Ser. No. 279,067
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 8017869[U]
Int. Cl.³ B62K *25/20;* **B62M** *17/00*
U.S. Cl. 180—226 **6 Claims**



1. A rear-wheel control for two-wheel vehicles, especially a motorcycle, comprising
a driven wheel controlled by a one-armed oscillating lever pivoted at the frame and connected to a gear wheel and pinion of a ring/gear pinion gearing so that the driven wheel is fixed with respect to rotation,
the gear wheel and the pinion being disposed in an axle housing relative to the one-armed oscillating lever by means of an arm and a moment support flexibly connected to said arm and the frame,
said housing adapted to be pivoted,
the pinion being disposed so that said pinion is aligned with the one-armed oscillating lever at the connecting member of the housing,
said pinion being connected to a universal shaft arranged in said lever,
said universal shaft, in the area of the pivot point of said

lever at the frame, being provided universal joint means and the lever is also flexibly connected to the housing.

4,434,869
RESCUE APPARATUS
Michael R. Roop, 4525 Tartan Dr., Baton Rouge, La. 70816, and Russell P. Cook, Sr., 2918 Little Farms Dr., Zachary, La. 70791
Filed Jun. 7, 1982, Ser. No. 386,206
Int. Cl.³ A62B 1/08
U.S. Cl. 182—10 **18 Claims**



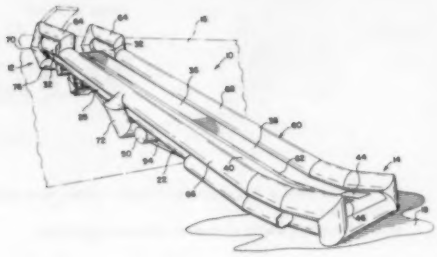
1. An apparatus for transporting personnel or other cargo between higher and lower elevations comprising:

(1) a support frame anchorable at the higher elevation in which frame is mounted: a right guideline means spool to which are attached the proximal ends of a right guideline means and a left guideline means and respectively, the distal ends of said guideline means being anchorable to the lower elevation, said guideline means spools having a means for tensioning said guideline means; a towline spool means having a right towline and a left towline which towlines are wound around said towline spool means in opposite directions, and

(2) carrier means suspendable from each guideline means by a pulley means, said carrier means being attachable to the distal end of each towline and positioned such that the carrier means suspended from one guideline means is near or at the higher elevation while the carrier means suspended from the other guideline means is near or at the lower elevation, said carrier means comprising a transverse member whose ends can fit on inclined anti-sag guides attached to the right and left sides of the support frame, said guides being placed such that they support the carrier means as it traverses the length of the guides, said guides extending downward and beyond the front of said support frame.

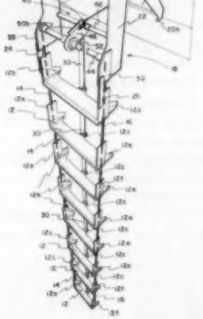
4,434,870
EVACUATION SLIDE DEVICE
John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 22, 1982, Ser. No. 443,424
Int. Cl.³ A62B 1/20; B65G 11/10
U.S. Cl. 182—48 **9 Claims**

1. An inflatable slide device for emergency evacuation having a flexible panel defining a slide surface extending from a head end of the inflatable slide device to a foot end of the inflatable side device and a first plurality of interconnected tubular members defining a first inflatable chamber, a second plurality of interconnected tubular members defining a second inflatable chamber fluidly independent of said first chamber, each of said chambers including tubular rail means along portions of each lateral margin of said panel, said rail means being raised from said flexible panel along the slide and contoured



for being raised even higher from the slide panel adjacent the head end of the slide device.

4,434,871
EMERGENCY ESCAPE LADDER
Johannes F. Niedworok, Rte. 4, Box 300, Sanford, N.C. 27330
Filed Mar. 3, 1983, Ser. No. 471,878
Int. Cl.³ E06C 1/36, 1/56, 1/58
U.S. Cl. 182—198 **17 Claims**

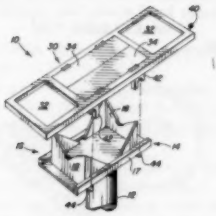


1. An emergency escape ladder adapted to assume a folded inoperative position and a rigid operative position wherein in said operative rigid position the ladder is functional to allow an individual to escape from a multi-story building structure by descending downwardly a selected distance and then repositioning the emergency escape ladder in order that the individual may further descend from the structure, and so forth and so on until the individual has moved to an area of safety, said emergency escape ladder comprising in combination: a plurality of treads; flexible tie means operatively interconnected between respective treads for maintaining said treads together in a ladder assembly even when said ladder assumes said folded inoperative position; retaining means formed about an upper end of said ladder for attaching the same to a structure for supporting the emergency escape ladder while an individual is descending downwardly thereon; and a plurality of rigid stabilizing bar means for operatively interconnecting respective treads together to form an elongated rigid ladder structure for enabling the emergency escape ladder to be raised, lowered, or repositioned by an individual escaping from said multi-story structure.

4,434,872
VEHICLE LIFT

Llewellyn R. Daniels, Jr., 437 W. 5th Ave., Apache Junction, Ariz. 85220

Filed Mar. 8, 1982, Ser. No. 356,179
Int. Cl.³ B60S *13/00*
U.S. Cl. 187—8.74 **18 Claims**



1. In an apparatus for hydraulically lifting a motor vehicle having:

a hydraulically operated, generally vertical ram;

axle fork means operatively coupled to said ram proximate the top distal end portion thereof;

a pair of spaced apart wheel saddle means for operatively engaging two parallel opposing tires of a motor vehicle at a time;

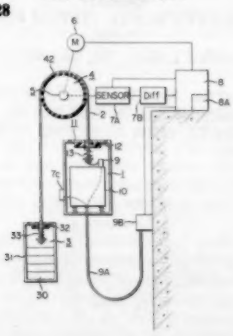
a yoke mechanism operatively secured to the lower surface of said wheel saddle means for lifting same to selectively permit the hydraulically operated ram to lift both the axle fork means and the wheel saddle means; and

the improvement comprising: yoke tang means for raising the lifting point in the vertically upward stroke of said hydraulically operated ram so that operative lifting engagement with the yoke mechanism of said wheel saddle means occurs earlier in said vertically upward stroke so that said axle fork means avoids the underside of said vehicle and the damage resulting therefrom.

4,434,873
ELECTRIC ELEVATOR CAR DRIVING DEVICE

Kazutoshi Ohta, Nagoya, and Eiki Watanabe, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,969
Claims priority, application Japan, Apr. 9, 1981, 56-53535
Int. Cl.³ B66B *1/00*
U.S. Cl. 187—28 **10 Claims**



7. An electric elevator car driving means for driving an elevator car, which is suspended from a cable, between floors in a building structure, said driving means comprising:

a metal sheave having at least one circular groove in the peripheral surface thereof and having a plurality of metallic projections projecting into said groove;

a layer of material disposed in said groove and covering said projections and forming a cable race;

said cable reeved along said cable race, the material of said layer having a coefficient of friction relative to said cable which is greater than that between said cable and the metal of said sheave, said projections have dimensions for causing them to come into secure engagement with said cable;

driving means connected to said sheave for driving said sheave for driving said cable;

detector means for detecting the occurrence of damage to said layer; and

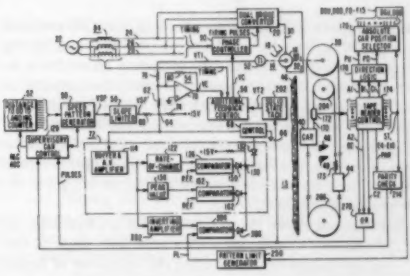
controller means to which said detector means is connected and which is in turn connected to said drive means, said controller means being responsive to said detector means for controlling said drive means for stopping the elevator car before it reaches the floor at the limit of movement of the elevator car in the vertical direction;

wherein said controller means comprises means for controlling the drive means for causing the elevator car to stop at the nearest floor at which the elevator car can be stopped when the deceleration and jerking of the elevator car are kept at the respective normal maximal values of deceleration and jerking capable of being withstood by the elevator car.

4,434,874
ELEVATOR SYSTEM

William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1982, Ser. No. 356,684
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **12 Claims**



1. An elevator system, comprising:

an elevator car,

motive means for moving said elevator car in a predetermined travel path having upper and lower terminal zones and an intermediate zone,

car position means providing a car position signal responsive to the absolute position of said elevator car, at least in the upper and lower terminal zones,

means providing a reference signal responsive to said car position signal,

speed pattern means providing a speed pattern signal indicative of the desired speed of said elevator car,

limit means for providing a limiting signal responsive to said reference signal, at least when said elevator car is in one of said terminal zones,

means having inputs responsive to said speed pattern signal and to said limiting signal for providing an auxiliary speed pattern signal which is responsive to the input signal of lesser magnitude at any instant,

means providing a velocity signal responsive to the actual speed of said elevator car,

and means for controlling said motive means in response to said velocity signal and said auxiliary speed pattern signal.

4,434,875

EMERGENCY LEVELLING DEVICE FOR A LIFT CAR

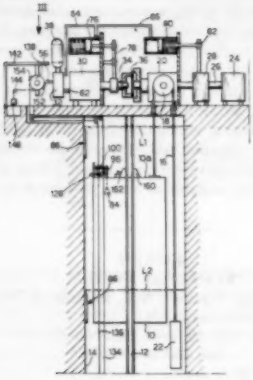
Sergio Scarzella, Corso Taranto 130/A, Torino, Italy

Filed May 10, 1982, Ser. No. 376,980

Claims priority, application Italy, May 12, 1981, 67635 A/81

Int. Cl.³ B66B *5/02*

U.S. Cl. 187—29 R **16 Claims**



1. Emergency levelling device for a lift car (**10**) operated by a winch (**20**) driven by an electric motor (**24**) and having an associated emergency brake (**28**), including an auxiliary motor having an output shaft, means for coupling the output shaft of the auxiliary motor to the winch (**20**), means for releasing the brake (**28**), and means for controlling the operation of the release means of the brake (**28**) and the auxiliary motor in the event of an unwanted stoppage of the lift car (**10**) in a position different from the normal stop levels (L_n), to bring the lift car (**10**) to one of said levels (L_n),

characterised in that the auxiliary motor is a hydraulic motor (**30**) having a shaft (**34**) with a reversible sense of rotaion and the means for controlling the operation of hydraulic motor (**30**) include:

an hydraulic control circuit (**32**) including a hydraulic accumulator (**38**) for operating the hydraulic motor (**30**), valve means (**54**) for controlling the communication between the hydraulic accumulator (**38**) and the hydraulic motor (**30**), and selector means (**69**) interposed between the valve means (**54**) and the hydraulic motor (**30**) for controlling the sense of rotation of the shaft (**34**) of the hydraulic motor (**30**);

actuator means (**56**, **152**; **184**) for controlling the opening of the valve means, and

means (**85**; **164**) for indicating of the position of the lift car (**10**) and position sensor means (**128**; **176**) cooperating with each other and displaceable relative to each other in synchronism with the movement of the lift car (**10**), the position sensor means (**128**; **176**) being operatively connected to the selector means (**69**) to control automatically the sense of rotation of the shaft (**34**) of the hydraulic motor (**32**) and the resulting movement of the lift car in the more convenient direction to reach one of said normal stop positions (L_n).

4,434,876

GUIDE ROLLER FOR SKIP OR CAGE

Ronald M. K. McKechnie, Vaal Reefs, South Africa, assignor to Vaal Reefs Exploration and Mining Company Limited, Johannesburg, South Africa

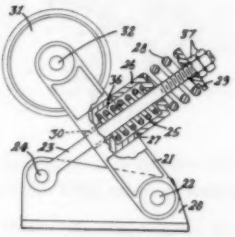
Continuation of Ser. No. 221,449, Dec. 30, 1980, abandoned.

This application Jul. 11, 1983, Ser. No. 512,572

Claims priority, application South Africa, Jan. 4, 1980, 80/0058

Int. Cl.³ B66B *7/02*

U.S. Cl. 187—95 **23 Claims**



1. A guide roller assembly suitable for a skip, cage, lift or the like, comprising:

guide engaging roller means for engaging a guide of said skip, cage, lift or the like;

first and second biasing means operatively connected to said roller means for urging said roller means into rolling contact with said guide;

said first biasing means having a lower load bearing capacity than said second biasing means, said first and second biasing means cooperating such that when the guide roller assembly moves towards said guide, said roller means is deflected against the action of said first biasing means by a predetermined distance, whereupon said first biasing means is rendered inoperative and said second biasing means is simultaneously brought into action to resist said load, and when said guide roller assembly moves away from said guide, said first biasing means undergoes extension to maintain said roller means in contact with said guide, there being no coupling of said first and second biasing means and no extension of said second biasing means during said extension of said first biasing means.

4,434,877

TRUCK-MOUNTED BRAKE SYSTEM FOR RAILWAY CARS

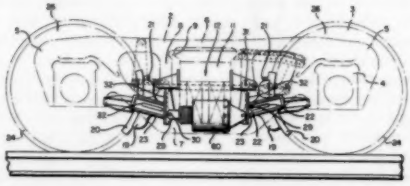
Kenneth D. Swander, Lansing, Ill., assignor to Hadady Corp., Lansing, Ill.

Continuation of Ser. No. 236,139, Feb. 20, 1981, abandoned.

This application Sep. 30, 1982, Ser. No. 429,122

Int. Cl.³ B61H *13/28;* **F16J** *15/16*

U.S. Cl. 188—52 **9 Claims**



1. A single-acting power cylinder unit adapted for use in truck-mounted, self-aligning railway freight car tread brakes adapted to be used with brake levers pivotally suspended from

a railway car bolster, which levers move brake beams toward respective wheel and axle assemblies, said power cylinder unit adapted to be pivotally connected to the lower ends of said brake levers, said power cylinders comprising:

a one-piece housing, which includes a cylinder with one closed end;

a bulkhead sealing the other end of said housing;

a rigid but movable piston head positioned within the cylinder of said housing, said piston head rigidly affixed to a piston rod;

spring means, within said housing, adapted to urge said piston head toward said bulkhead;

an annular bearing mounted in the closed end of said housing adapted to provide lateral support for said piston rod, the combination of said housing, said bulkhead and said piston head defining a gas-tight space;

said piston head comprising a skirt having three circumferential grooves on the exterior surface, said grooves adapted to receive a bearing ring, a fluid sealing ring and a lubricating ring, in that order sequentially starting from said gas-tight space; and

a compressed gas port adapted to pass compressed gas into said gas-tight space.

4,434,878

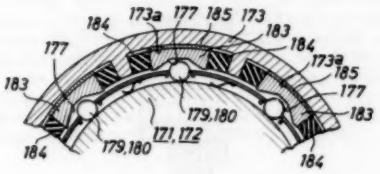
CLUTCH MECHANISM FOR POWER TRANSMISSION SYSTEM

Kiyokazu Okubo, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 208,416, Nov. 19, 1980, Pat. No. 4,373,407. This application May 3, 1982, Ser. No. 373,856

Int. Cl.³ F16D *47/04, 41/06;* F16H *35/04*

U.S. Cl. 192—48.92 **5 Claims**



1. A clutch mechanism for a power transmission system having one drive member and two driven members, comprising:

at least one pair of roller clutch members interposed between said drive member and said two driven members so as to transmit the rotational power of said drive member to said driven members independently of each other when said drive member rotates;

said pair of roller clutch members operatively cooperating with said drive member and said driven members such that one of said driven members, which is rotating at a higher speed than said drive member due to external force, is set free from said drive member while said power from said drive member is transmitted to the other driven member;

said drive member being rotatably fitted on outer circumferential portions of said two driven members;

said drive member including an inner circumferential portion provided with recessed cam surface means for loosely receiving said rollers and for locking said rollers at a front position and a rear position in the rotational direction of said drive member to thereby connect said drive member and said two driven members;

said roller clutch members being loosely held by retaining means so as to be movable in the rotational direction of said drive member;

said drive member having an inner circumferential portion formed with a recessed portion;

at least one cam member having said recessed cam surface means provided thereon being disposed in said recessed portion; and

elastic members disposed in said recessed portion at the front and rear of said cam member in the rotational direction of said drive member.

4,434,879

SYSTEM FOR AUTOMATIC ACTUATION OF A MOTOR VEHICLE CLUTCH

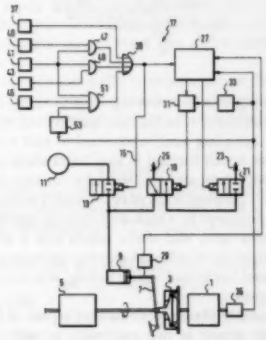
Dieter Lutz, Schweinfurt; Franz Nagler, Gochsheim; Wolfgang Thieler, Hassfurt-Uchenhofen, and Rudy Tellert, Schweinfurt, all of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,011

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028251

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.052 **8 Claims**



1. A system for automatic actuation of the clutch means of a motor vehicle provided with a multiple gear transmission and with means for shifting said transmission including a motor comprising pneumatic cylinder means for effecting engagement and disengagement of said clutch means in accordance with fluid pressure in said cylinder means; connecting means operatively joining said pneumatic cylinder means with said clutch means; fluid pressure source means from which fluid pressure may be supplied to said cylinder means; vent means through which fluid pressure may be vented from said cylinder means; valve means for controlling delivery of fluid pressure to said cylinder means from said fluid pressure source means and for venting of fluid pressure from said cylinder means through said vent means; and control means for controlling operation of said valve means in dependence upon the position of said connecting means and the speed of said motor, said control means including switching contact means responsive to the operating condition of said transmission to effect engagement or disengagement of said clutch; said switching contact means including a first switching contact operable at initiation of gear change of said transmission, a second switching contact operable when said transmission is engaged in one of a first gear or a reverse gear, a third switching contact operable when higher gears of said transmission are engaged and a fourth switching contact operable in an undepressed position of an accelerator pedal of said motor vehicle, with a manually operable fifth switching contact being provided, said control means including means for switching said valve means into a position assigned to disengagement operation when either of said first switching contact or said second switching contact and said fourth switching contact are operated together or when said fourth switching contact and said fifth switching contact are

operated together or when said third switching contact and said fourth switching contact are together and at the same time the rotational speed of said motor is below a set value.

4,434,880

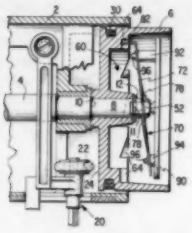
HANDWHEEL CLUTCH FOR SEWING MACHINES

Boleslaw Kornatowski, Elizabeth, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 11, 1981, Ser. No. 329,637

Int. Cl.³ F16D *11/00*; D05B *59/00*

U.S. Cl. 192—67 R **4 Claims**



1. In a sewing machine having an arm shaft, a handwheel, and a drive means for rotating said handwheel, a clutch means for drivingly coupling said handwheel to said arm shaft comprising a drive notch formed in said handwheel and a driving element supported on said arm shaft for rotation therewith and arranged to tilt between each of two bistable positions, a first of said bistable positions in which said driving element is in driving engagement with said drive notch and a second of said bistable positions in which said driving element is out of driving engagement with said drive notch, wherein said driving element comprises:

a. a substantially planar yoke having a pair of flexible members each joined at one extremity to said yoke and arranged with their free extremities facing each other and spaced apart a predetermined distance;

b. diametrically opposed reception seat surfaces formed on said arm shaft spaced apart a distance which is greater than said predetermined distance between said free extremities of said flexible members;

c. said yoke being assembled on said arm shaft with said free extremities of said flexible members arranged each in engagement with a respective one of the diametrically opposed reception seat surfaces on said arm shaft and with said flexible members being flexed each to a position on an opposite side of the plane of said yoke; and

d. means for interlocking said yoke with said arm shaft for rotation therewith when said free extremities of said flexible members are in engagement with said reception seat surfaces.

4,434,881

HIGH SPEED ACCESSORY DISCONNECT APPARATUS AND METHODS

Jpseph Denk, Manhattan Beach, and William B. Martin, Redondo Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 19, 1981, Ser. No. 245,419

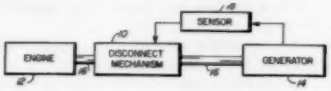
Int. Cl.³ F16D *43/25, 11/04*

U.S. Cl. 192—89 A **27 Claims**

1. High speed apparatus for disconnecting a driving mechanism from a driven mechanism rotationally coupled thereto by shaft means, at least a portion of the shaft means being axially movable out of coupling engagement with one of the mechanisms, said apparatus comprising:

(a) cam means mounted coaxially on the shaft means for rotation and axial movement therewith, said cam means having axially spiraling groove means thereon; and

(b) cam follower means, selectively movable generally radially into said groove means during rotation of said cam means for interacting with a surface of said groove means to axially drive at least a portion of the shaft means relative to said cam follower means and out of engagement with one of the mechanisms, said groove means being configured to permit unimpeded entry of said cam follower means thereinto regardless of the rotational orientation of said cam means relative to said cam follower means.



4,434,882

CLUTCH RELEASE BEARING

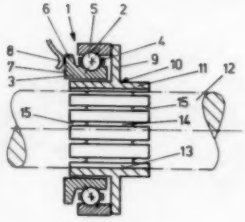
Armin Olschewski; Lothar Walter, both of Schweinfurt; Manfred Brandenstein, Eussenheim, and Leo Müller, Essleben, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 280,120

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 8017878[U]

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **5 Claims**



1. In a release bearing, particularly for automotive-vehicle clutches, with a sliding sleeve made of a vibration damping and noise-insulating material, the sleeve being mounted with small clearance on a guiding element, in a manner that allows axial back and forth movement; the improvement wherein the sliding sleeve is provided with recesses that extend in an axial direction and are distributed around the circumference and has slits in the regions thereof adjacent its axial ends that originate at its axial ends.

4,434,883

DEVICE FOR SHAFT ALIGNMENT IN A CLUTCH OR BRAKE ASSEMBLY

Charles D. Raines, Bethel, Minn., assignor to Horton Manufacturing Co., Inc., Minneapolis, Minn.

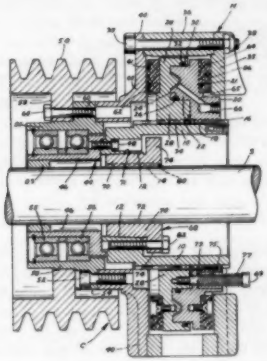
Continuation of Ser. No. 141,965, Apr. 21, 1980, abandoned. This application Feb. 28, 1982, Ser. No. 352,914

Int. Cl.³ F16D *1/08, 25/063*

U.S. Cl. 192—110 R **1 Claim**

1. Device for centering and aligning a shaft in a clutch or brake assembly having an assembly housing, comprising, in combination: a quick demount bushing having a collar portion including an axial bore, with the diameter of the axial bore of the quick demount bushing being generally equal to the diameter of and for receipt onto the shaft; means for locking the

quick demount bushing from relative rotation with the shaft; the quick demount bushing further including a tapered outer surface; the assembly housing including a hub having an axial bore being of greater diameter than the diameter of the shaft; the hub including an inner tapered bore having a shape complementary to and for receipt of the tapered outer surface of the quick demount bushing to form a wedge fit therebetween; means for holding the quick demount bushing in the inner tapered bore of the hub; and a shaft mount in the assembly housing in the form of a one piece bushing having a fixed thickness dimension in a radial direction and in the axial direction and having an outside diameter substantially euqal to the diameter of and for receipt into the axial bore of the hub and having an inside diameter substantially equal to the diameter of and for receipt onto the shaft for holding the shaft in axial alignment with the hub as the quick demount bushing is being inserted and drawn into the inner tapered bore of the hub, with the shaft mount being removable from the axial bore of the hub and from the shaft after the quick demount bushing is held by the holding means in the inner tapered bore of the hub with the shaft in axial alignment with the hub, the bushing allowing use of the same assembly housing with differing size shafts.



4,434,884

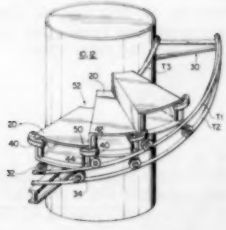
SPIRAL ESCALATOR

John L. Kettle, Vernon, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 294,087, Aug. 19, 1981, abandoned. This application Jul. 1, 1983, Ser. No. 509,982

Int. Cl.³ B65B 9/12

U.S. Cl. 198—328 **1 Claim**



1. A system for moving people between two or more floors, characterized by:

coupled steps that move in a closed pattern, having inner and outer perimeters between the floors,

a biaxis linkage for coupling adjacent steps to enable them to pivot about a rotation axis that is perpendicular to either the inner or outer perimeter,

a track system for guiding the steps in the pattern,

a pair of vertical supports that extend between the floors for supporting the tracks,

means for propelling the steps along the tracks,

said closed pattern having sections that spiral around the supports between the floors, in which the steps form a staircase, and substantially straight, horizontal sections which extend between the spiral sections and which are located below each floor,

said track system comprising a single track along the inner perimeter of the pattern and two tracks along the outer perimeter, said two tracks being vertically disposed in the staircase and the higher of the two being horizontally disposed outward from the outer perimeter relative to the other, each step having a guide roller riding on said higher track, which roller is on an arm which extends over the lower track,

a biaxis linkage for connecting said steps along the outer perimeter, said linkage being the only connection between adjacent steps and comprising a vertical pin on each step, the pins being located between the corners of adjacent steps at the outer perimeter, and an arm connected to the pins of adjacent steps which can rotate about and slide vertically on said pins, and

each step having a generally triangular shape like a pie slice to provide a generally triangular space between adjacent steps in said horizontal sections of the pattern.

4,434,885

OVERCAP ORIENTING APPARATUS

Martin Brugman, and Herman Van Schaik, both of Amsterdam, Netherlands, assignors to S. C. Johnson & Sons, Inc., Racine, Wis.

Filed Jan. 29, 1982, Ser. No. 344,160

Int. Cl.³ B65G 47/24

U.S. Cl. 198—388 **1 Claim**

1. Apparatus for arranging in like orientation overcaps of the type having open bottoms, comprising:

a bin for holding jumbled overcaps, said bin having a cylindrical wall with an opening on one side;

a chute beside said bin, having a horizontal upper edge along said opening;

a cylindrical array of horizontal flight bars within said bin, each of said bars pivotable about a horizontal axis and having a multiplicity of pickup sites spaced therealong;

means to rotate said array such that said bars pass said edge seriatim along a downward arc;

each pickup site having an overcap support surface parallel to and spaced from said axis, lateral walls extending from said support surface toward said axis and forming with said support surface an overcap-receiving cavity, and a pickup pin extending from said support surface toward said axis; and

means to pivot said bars to different orientations at different positions within said bin, thereby to: (1) capture overcaps in said cavities with their bottoms spaced from said support surfaces and facing said pins, (2) invert said overcaps

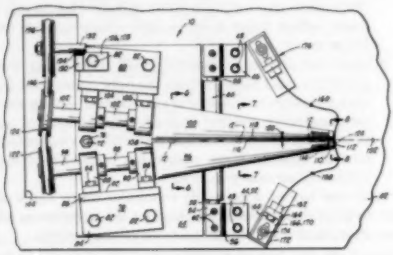
such that they slide over said pins, (3) deposit said overcaps bottom down onto said chute, and (4) withdraw said pins to free said overcaps to slide down said chute in like orientation.

4,434,886

APPARATUS AND METHODS FOR POSITIONING ELECTRICAL COMPONENTS

John Fajt, Wynnewood, Okla., assignor to Xenell Corporation, Wynnewood, Okla.

Filed Sep. 12, 1980, Ser. No. 186,446
Int. Cl.³ B65G *39/10, 47/24*
U.S. Cl. 198—389 **1 Claim**



1. An automated method of handling electrical components, comprising:

mechanically positioning in sequence at a predetermined position a plurality of electrical components of the type including:

a body;

a lower body portion extending from said body in a direction parallel to a first axis of said body, said lower body portion having a width in a direction parallel to a second axis of said body, and a thickness less than said width in a direction parallel to a third axis of said body, said first, second and third body axes being mutually perpendicular; and

first and second lead wires extending from said lower body portion substantially parallel to said first body axis and spaced apart in a direction parallel to said second axis;

said positioning step including the steps of:

placing each of said electrical components between a pair of rotating rollers so that said body of each of said electrical components is engaged by both of said rollers and thereby orienting each of said electrical components so that said first body axis thereof is vertical, with said lead wires extending downward from said body, and so that said second body axis is parallel to a predetermined horizontal line, said rollers rotating in opposite directions and inwardly from above toward each other; and

gravity feeding said oriented electrical components sequentially along a predetermined path between said rotating rollers toward small ends of said rotating rollers to a predetermined location in space, said rotating rollers being continuously conically tapered between a location thereon where said electrical components are initially placed and said small ends; and

releasably retaining each of said electrical components at said predetermined position;

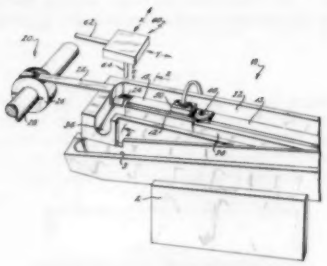
said predetermined position of said electrical components being defined by said predetermined location in space, said vertical orientation of said first body axes, and said orientation of said second body axes parallel to said predetermined horizontal line.

4,434,887

ISOLATED STOP FOR VIBRATING FEEDERS

Glen E. Yager, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Continuation of Ser. No. 222,677, Jan. 5, 1981, abandoned. This application Sep. 2, 1982, Ser. No. 414,061
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—391 **2 Claims**



1. In an apparatus for vibratory feed of electrical components along a guide shelf of a vibrating feeder and into engagement with a stop means for halting said components at an unload station of said feeder and for pick-up of said parts on said feeder at said unload station by a pick-up head which is isolated from the vibrations of said feeder, said vibrating feeder comprising means for recirculating components which are misoriented and improperly positioned on said guide shelf, the improvement comprising:

support means for supporting said stop means, said support means being isolated from the vibrations of said feeder,

whereby the vibrations of components at said unload station are minimized such that precise pick-up of said components on said feeder by said pick-up head is facilitated;

means for limiting the back-up of components on said guide shelf behind a component abutting said stop edge; and

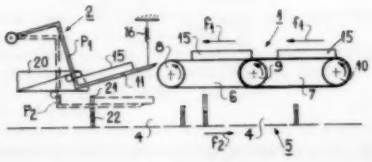
said stop means being configured to extend into said feeder such that an edge of said stop is adjacent and aligned with said guide shelf at said unload station and is pivotal away from said feeder for repair and adjustment access to said feeder.

4,434,888

APPARATUS FOR SUPPLYING AN ARTICLE SORTING MACHINE CONVEYOR, A METHOD FOR USING THIS APPARATUS

Michel Divoux; Hubert Bonansea, and Bernard Constant, all of Paris, France, assignors to Hotchkiss-Brandt Sogeme H.B.S., Paris, France

Filed Jul. 20, 1981, Ser. No. 285,289
Claims priority, application France, Jul. 22, 1980, 80 16125
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—466 **8 Claims**



1. Apparatus for supplying articles to a conveyor, said apparatus comprising:

(a) a storage system comprising a plurality of endless belts in

series, all but the last in the series being arranged to feed articles thereon to the next endless belt in the series;

(b) first means for independently driving each of said endless belts;

(c) a tilting support in the form of a notched plate having a plurality of teeth located at the downstream end of said series of endless belts, said tilting support being variable between a raised position in which it is in position to receive an article from the last in the series of endless belts and a lowered position in which it is in position to transfer an article to the conveyor;

(d) second means for moving said tilting support from its raised position to its lowered position;

(e) third means for detecting whether an article is carried by each of said endless belts;

(f) fourth means for detecting whether said tilting support is in its raised or lowered position; and

(g) a control device for actuating said first means associated with each of said endless belts prior to the last in the series when said third means associated with the next endless belt in the series detects that the next endless belt in the series is vacant, for actuating said first means associated with the last in the series of said endless belts when said third means associated with the preceding endless belt detects that said preceding endless belt is carrying an article and said fourth means detects that said tilting support is in its raised position, and for actuating said second means after an article has been desposited on said tilting support by the last in the series of said endless belts.

4,434,889

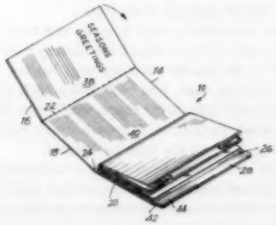
GREETING CARD CONSTRUCTION

Guy A. Fery, 117 E. 57th St., New York, N.Y. 10022

Filed Feb. 8, 1982, Ser. No. 346,441

Int. Cl.³ B65D *69/00, 27/06, 27/08*

U.S. Cl. 206—216 **11 Claims**



1. A greeting card construction comprising a first panel joined to a second panel by a first fold line, a third panel joined to said second panel by a second fold line, said first and second panels being adapted for the display of printed indicia thereon, and a collapsable receptacle having a base and upwardly projecting sides, said base being removably affixed to said third panel, said sides being foldable upon said base such that said third panel may be folded along said second fold line into a position overlying said second panel with said receptacle in its folded configuration lying therebetween.

4,434,890

PACKAGING CONTAINER FOR SENSITIVE PRODUCTS

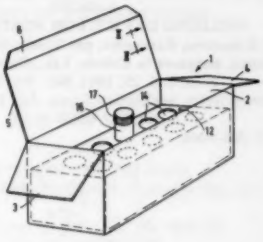
Reinhard Sieck, Cologne, and Gerhard Brüsewitz, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,343

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 8033376[U]

Int. Cl.³ B65D *81/30, 85/62;* **G01N** *1/10*

U.S. Cl. 206—443 **15 Claims**



1. A temperature-stabilizing packaging container for condensation-sensitive, water-containing products in closed tubes, especially semi-solid test media such as immersion nutrient substrate carriers for the determination of micro-organisms or the like, comprising: a strip-like, heat-insulating material forming the packaging container; and metallic covering means on at least one of the surfaces of the packaging container for repelling heat-producing radiation.

4,434,891

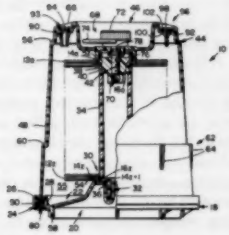
DISC PACKAGE

James R. Skinner, Saratoga, and Robert G. Atwood, Redwood City, both of Calif., assignors to M.U. Engineering & Mfg., Inc., Mountain View, Calif.

Filed Mar. 18, 1983, Ser. No. 476,475

Int. Cl.³ G11B *1/02;* **B65D** *85/57, 81/18, 53/02*

U.S. Cl. 206—444 **18 Claims**



1. A disc package (**10**) for storing a plurality of discs (**12***a*–**12***z*) having central openings (**16***a*–**16***z*), comprising:

a generally circular base (**18**) having a bottom surface (**20**) adapted to be supported above a support surface and a top surface (**22**) having a peripheral portion (**24**) having a peripheral wall (**26**) extending generally upwardly a spaced distance from the top surface (**22**) and a central portion (**30**) having a core accepting structure (**32**);

a core (**34**) having a lower end portion (**36**) supported by said core accepting structure (**32**) and an upper end portion (**38**) extending generally upwardly away from said top surface (**22**);

a cover (**44**) having a generally circular top (**46**) and a peripheral skirt (**48**) extending downwardly therefrom to a lower rim portion (**50**) adjacent said wall (**26**);

means (68) for fastening said circular top (46) to said upper end portion (38); and

a resilient gasket (80) removably attached to a respective one of said lower rim portion (50) and said wall (26) and slidably sealingly bearing against a respective other of said lower rim portion (50) and said wall (26).

4,434,892

HOLDING DEVICE FOR NESTED PIPES

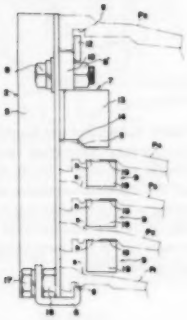
Tatsuo Kanazawa, Kamagaya, and Tsuneo Suyama, Narita, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jun. 25, 1982, Ser. No. 392,212

Claims priority, application Japan, Jul. 30, 1981, 56-120387

Int. Cl.³ B65D *85/20*

U.S. Cl. 206—446 **11 Claims**



1. A device for holding nested pipes including at least two adjacent pipes differing greatly in diameter, each nested pipe having a socket formed with an annular groove in its inner periphery and an annular shoulder on its outer periphery, the device comprising an abutting member adapted to contact the socket end faces of all the pipes, and at least one radial-axial retainer means removably mountable on the abutting member and adapted to be positioned between said two adjacent pipes, said radial-axial retainer means comprising a mount member having a bolt hole and removably mountable on the abutting member by a bolt insertable through the bolt hole thereof and through a slot formed in the abutting member and by a nut adapted to be screwed on the bolt, a first engaging member attached to one end of the mount member close to the diametrically larger of said two adjacent pipes and provided with an engaging projection adapted to engage in the annular groove of the diametrically larger of said two adjacent pipes, and a second engaging member disposed close to the diametrically smaller of said two adjacent pipes and provided with stepped engaging means adapted to engage with the annular shoulder of the diametrically smaller of said two pipes.

4,434,893

TAMPER EVIDENT PACKAGING

Gordon A. Barlow, Glenview, Ill., assignor to Gordon Barlow Design, Skokie, Ill.

Filed Jan. 14, 1983, Ser. No. 457,938

Int. Cl.³ B65D *81/20, 77/04*

U.S. Cl. 206—522 **8 Claims**

1. A tamper evident packaging for contaminateable products including:

inner and outer gas tight containers,

the inner container having at least one flexible wall,

the outer container having at least one flexible wall,

the inner and outer containers each being pressurized with gas above atmospheric pressure to inflate their flexible walls.

4,434,894

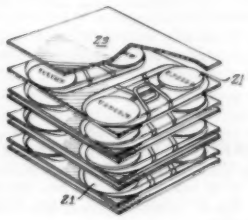
DUAL PURPOSE PALLET SHEET

Chong H. Lee, Lake Forest, Ill., assignor to Suh Won America, Inc., Waukegan, Ill.

Filed Nov. 4, 1982, Ser. No. 439,311

Int. Cl.³ B65D *19/20, 57/00*; A45C *13/02*

U.S. Cl. 206—526 **5 Claims**



1. A specialty package for shipping bags made of flexible material, which package comprises

an outer box having top, bottom and two side panels and havng end closure means for closing both ends thereof,

a plurality of flexible material bags having flexible handles for carrying same, said bags being each designed to have a generally cylindrical shape with a circular cross section and being each provided with quick opening means for gaining entry to the interior thereof,

said bags each being folded into a flattened condition and

a plurality of pieces of sheet material each having a shape that is substantially the same as the shape of said box top panel,

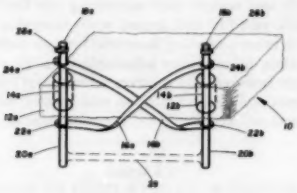
said folded flexible material bags being arranged in layers in stacked relationship between said top and bottom panels with at least one of said sheet material pieces being interposed between adjacent layers of folded bags,

whereby upon removal of said bags and sheet material pieces from said outer box, each of said sheet material pieces is rolled into the shape of a tube and inserted through said quick-opening means into one of said bags so that the natural resiliency of said sheet material maintains said bag in unfolded expanded condition suitable for display for sale.

4,434,895
STRAPPED WICKETED BAGS PACKET

Philip T. Voso, Tryon, N.C.; Billy B. Hallmark, Duncan, S.C.; Richard D. Thomas, Mauldin, S.C., and Benjamin G. Wofford, Spartanburg, S.C., assignors to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Aug. 13, 1982, Ser. No. 408,093
Int. Cl.³ A45C *13/26, 13/30*
U.S. Cl. 206—554 **17 Claims**

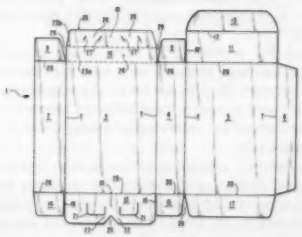


1. A wicketed bags packet, comprising:
(a) a stack of flattened, flexible packaging bags having two wicket holes therethrough;
(b) wicket shanks extending through said wicket holes, respectively; and
(c) elongate, flexible binding members crossed in an under-to-over pattern between said shanks and forming a handgrip for said packet, each said binding member being affixed to a shank, respectively, at the rear of said stack and extending to and being removably and reclosably affixed to the other of said shanks at the front of said stack, said binding members being adapted to be reclosed over said stack thereby to reform said handgrip during interruption in dispensing said bags from said stack.

4,434,896
TAMPER-RESISTANT RECLOSABLE PACKAGE

Mickey R. Beloate, Memphis; Harley E. Erb, Germantown, and Charles W. Shelton, Memphis, all of Tenn., assignors to Plough, Inc., Memphis, Tenn.

Filed May 2, 1983, Ser. No. 490,618
Int. Cl.³ B65D *5/54, 55/02*
U.S. Cl. 206—621 **8 Claims**

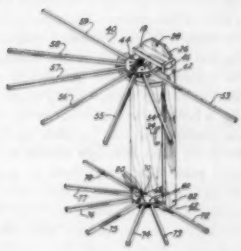


1. A package blank having top and bottom portions which is suitably cut and scored, comprising: (a) a series of generally rectangular package walls hinged at lateral edges by substantially parallel score lines, said package walls including front and rear panel walls, a pair of side panel walls, and a glue panel hinged to a lateral edge of one of said side walls, a first closure and panel at said top portion having first and second ends, said second end hinged to said rear panel wall and said first end removably engagable from said front panel wall; a second closure end panel at said top portion also having first and second ends, said first end hinged to said rear panel wall, a flap hinged to the second end of said second closure and end panel, said second closure end panel closing in an opposite direction to said first closure end panel, whereby said first closure end panel can be torn or damaged while maintaining the structural integrity of said second closure end panel, said first closure end panel having near its first end a generally longitudinally disposed line of weakness substantially extending the length thereof and substantially parallel to said first end which together with said hingedly connected and removably engagable first end defines a potential tear path therein; said first closure end panel also containing behind said weakening line, at least one cut or weakening score on a surface of said end closure panel adjacent to said second end, and which together with said second end defines a distortable bridge; and (b) tamper-resistant closure means for said bottom portion.

4,434,897
CLOTHES DRYING RACK

Ralph B. Gelhaus, 4293 Minster-Ft. Recovery Rd., St. Henry, Ohio 45883

Filed Nov. 19, 1981, Ser. No. 322,735
Int. Cl.³ A47B *53/00*
U.S. Cl. 211—1.3 **6 Claims**



1. A clothes drying rack comprising two vertical side walls and top and bottom walls forming a cabinet, a door pivoted to one of said side walls and being spaced downwardly from said top wall and upwardly from said bottom wall, an upper rack set disposed in said cabinet in the upper part thereof and having a fixture pivoted between said side walls adjacent the upper edge of said door, said rack set having a plurality of clothes hanging arms extending radially outwardly from said fixture and pivoted at their inner ends to said fixture for moving angularly outwardly and inwardly with respect to one another, pivot means for pivoting said fixture and said arms from a vertical position in said cabinet to a horizontal position projecting outwardly from said cabinet with said rack set being supported by said door when said door is closed after said arms are lifted to horizontal position, a lower rack set disposed in said cabinet in the lower part thereof and having a fixture pivoted between said side walls, said lower rack set having a plurality of clothes hanging arms extending radially outwardly from said fixture and pivoted at their inner ends to said fixture for moving angularly outwardly and inwardly with respect to one another, and a pivot means for pivoting said fixture and said arms of said lower rack set from a vertical position in said cabinet to a horizontal position projecting outwardly from said cabinet with the lower side of said lower rack fixture being on substantially the same plane as the upper surface of said bottom wall when said lower rack set is in horizontal position, said pivot means of said lower rack set being spaced inwardly further from said door than said pivot means of said upper rack set so that said lower rack set is disposed behind said upper rack set when said rack sets are folded into said cabinet.

4,434,898

CLOTHESLINE MAST

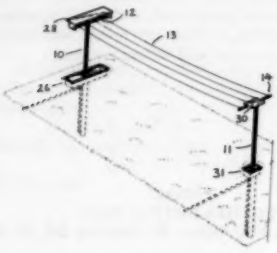
Patrick J. McCarthy, P.O. Box 5053, Hamilton, New Zealand

Filed Dec. 7, 1981, Ser. No. 327,918

Claims priority, application New Zealand, Dec. 9, 1980, 195779

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—1.3 **1 Claim**



1. A clothes line system including a pair of spaced apart clothes line supports on one of which a plurality of clothes lines are storable and extendable therefrom in substantially parallel relationship for anchoring to the other of said supports, wherein at least one of the supports includes a clothes line mast having a column telescopically mounted within a casing, said casing being adapted to be sunken in situ, sealing means being mounted on the column adjacent the lower end thereof, a pressurized fluid connection means being located at the lower end of the casing, a hollow box member being attached to the upper end of said casing, said box member having an open top and an aperture in its base through which said column can protrude, a cover plate being attached to said column and capable of covering said box member, said mast further including means mounting a clothes line cross head to said column whereby said mounting means and/or said clothes line cross head can be contained within said box member when said column is retracted into said casing, said column being sunken into the ground so that when the mast is in its retracted position, it will be hidden by said cover plate.

4,434,899

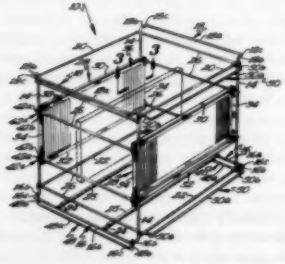
ADJUSTABLE WIRE TOTE FOR PRINTED CIRCUIT BOARDS

Eric M. Rivkin, Minnetonka, Minn., assignor to Liberty Carton Co., Minneapolis, Minn.

Filed Nov. 17, 1980, Ser. No. 207,223

Int. Cl.³ B05C *13/02*

U.S. Cl. 211—41 **9 Claims**



1. A wire frame tote for printed circuit boards, said tote comprising:

a frame comprising:

first and second sides;

first and second ends; and

at least first and second board holding means, each

said board holding means being continuously adjustably attached to said first and second sides, each said board holding means having a plurality of spaced parallel grooves for receiving the edge of a printed circuit board, each said groove comprising first and second opposing walls, said first and second walls being non-parallel, each said groove further comprising a bottom wall, said bottom wall connecting said first and second walls, said first and second walls diverging away from each other and away from said bottom wall, said board holding means being adjustable so as to vary the distance between said grooves on said first board holding means and said grooves on said second board holding means and accommodate opposite sides of a board.

4,434,900

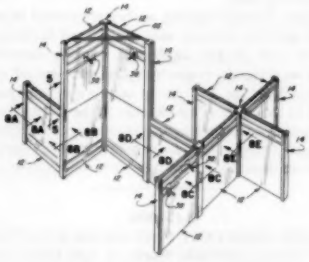
FREE STANDING ARTICLE DISPLAY APPARATUS

Melvin W. Cook, Dover, Ohio, assignor to Masonite Corporation, Chicago, Ill.

Filed Jan. 25, 1983, Ser. No. 460,887

Int. Cl.³ A47B *47/00*

U.S. Cl. 211—189 **20 Claims**



1. A free standing article display apparatus, comprising:

a display panel having an edge and means for securing an article for display adjacent a face of said panel;

an edge channel mounted along said edge of said panel including a web spaced outwardly apart from said panel edge and a pair of flanges engagable with opposite faces of said panel;

spacer means for providing an open space between said panel edge and said channel web, said web including at least one aperture therein for receiving a fastener;

an upstanding post having a longitudinally extending recess in one face thereof for receiving said edge channel on said display panel; and

at least one fastener extending between said recess of said post and said web of said channel for securing said post along said edge of said panel, said fastener including head means adapted to fit within said space and engage said channel web in interlocking relation.

4,434,901

SAFETY APPARATUS FOR CRANES

Paul O. Gehl, P.O. Box 303, Hilbert, Wis. 54129

Filed Jul. 15, 1981, Ser. No. 283,495

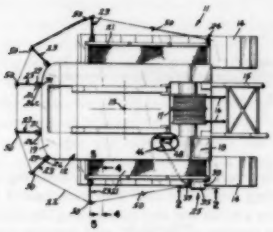
Int. Cl.³ B66C *15/00*

U.S. Cl. 212—153 **19 Claims**

1. In a crane having a body defining opposite sides, a front end from which a crane boom is supported and extends forwardly, and a back end, the body being constructed for rotational swinging movement about a predetermined axis to position the crane boom in a desired location, the improvement which comprises:

cable means of predetermined length;

support means for supporting the cable means so that it extends around the opposite sides and back end of said crane body for movement therewith and in spaced relation thereto, said support means being constructed and arranged to resiliently support the cable means in a normal position under tension in such a way that the cable means may be deflected from its normal position to alter its



effective length as it engages or is engaged by an object, and is returned to its normal position after engagement with the object ceases;

control means operatively connected to the cable means for generating an alarm signal when the cable means is deflected and its effective length is altered;

and alarm means operably connected to the control means for generating an alarm in response to the alarm signal.

4,434,902

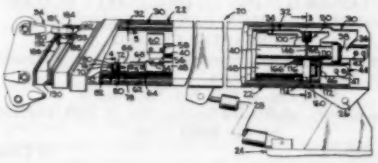
APPARATUS FOR EXTENDING AND RETRACTING A MANUAL BOOM SECTION

Frederick R. Goode, Lexington; John D. Evans, Nicholasville, and James W. Cox, Jr., Lexington, all of Ky., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 5, 1981, Ser. No. 240,727

Int. Cl.³ B66C *23/04*

U.S. Cl. 212—268 **9 Claims**



1. In a multi-section extensible telescopic boom having at least three boom sections mounted for telescopic movement within each other, a multi-piece extensible and retractable power means having one piece connected to one of said telescopic sections; the improvement comprising first selectively operable coupling means solely supported by and disposed within a second boom section for selectively connecting and disconnecting another piece of said power means to the second boom section, second selectively operable coupling means operatively connecting said another piece of said power means to said third boom section for extending and retracting said third boom section relative to said second boom section in response to extension and retraction of said power means when said first coupling means is released, means for releasably locking said third boom section to said second section in extended position, and removable crank means engageable with said first coupling means for moving said first coupling means between said position connecting said another piece of said power means to said second boom section and said released position by operating said crank means in opposite directions.

4,434,903

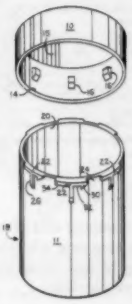
SAFETY CLOSURE AND CONTAINER

Carl W. Cooke, 8146 Lt. William Clark Rd., Parker, Colo. 80134

Filed Nov. 22, 1982, Ser. No. 443,486

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—222 **6 Claims**



1. In the combination of a container having an open neck portion, a closure for said container comprising a top wall for sealing the mouth of said open neck portion and a cylindrical skirt portion adapted to receive the open neck portion of said container, resilient means carried on the inner wall of the top portion of said closure to urge said closure axially upwardly when said closure is drawn down into sealing position on the neck portion of said container and cooperating locking elements carried on the neck portion of said container and the inner wall of the skirt portion said portion, the improvement comprising:

the locking elements of said closure comprising lugs spaced about the periphery of the inner wall of the skirt portion;

bayonet lugs disposed about the open neck portion of said container, said bayonet lugs comprising an elongated portion adjacent the rim of the mouth of said container and extending axially on the neck portion and a leading end member extending normally to the elongated portion, the leading end member having an enlarged area spaced from the elongated portion of the bayonet lug to define an indented portion on the bayonet lug for receiving a lug of said closure when said closure is in the sealing position over the mouth of the open neck portion of said container.

4,434,904

BOTTLE CLOSURE

Richard D'Amico, Gurnee; Thomas A. Fowles, McHenry, both of Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 157,438, Jun. 9, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,486

Int. Cl.³ B65D *41/32*

U.S. Cl. 215—232 **5 Claims**

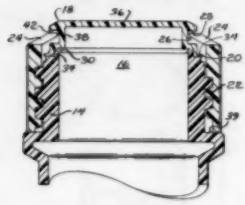
1. A three-piece quick-opening and reclosable container and closure system comprising:

a one-piece plastic container including an externally threaded neck portion defining a dispensing outlet, and an annular outwardly extending sealing surface above said threaded portion:

a separately formed plastic closure member covering said dispensing outlet and peripherally heat sealed to said neck portion along said sealing surface to define a frangible section therebetween, said closure member having a peripheral recess defined by a reduced diameter portion; and

a separately formed internally threaded jacking ring threadedly engaged on said neck, said jacking ring having a plurality of radially inwardly directed flexible fingers adapted to snap into said recess upon screw attachment of

said jacking ring to said container neck portion, and to break said frangible section by prying said closure member off when said jacking ring is removed by unscrewing from said container neck portion, the extension of said fingers



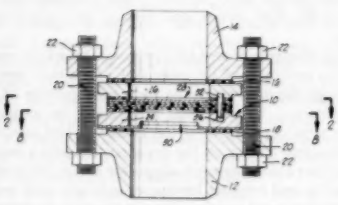
into said recess retaining said closure member in association with said jacking ring whereby upon reattachment of said jacking ring to said container, said closure member closes said dispensing outlet.

4,434,905

RUPTURABLE LOW PRESSURE RELIEF APPARATUS

Sam A. Ou, Bixby, and Charles E. Beair, Tulsa, both of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Mar. 31, 1982, Ser. No. 363,820
Int. Cl.³ B65B *25/00*
U.S. Cl. 220—89 A **19 Claims**



1. A rupturable pressure relief apparatus which ruptures at a low pressure differential adapted to be sealingly clamped between inlet and outlet annular support members comprising:

a first circular rupturable member formed of solid flexible material adapted to be positioned adjacent said inlet annular support member;

a second circular rupturable member formed of flexible material positioned adjacent said first rupturable member on the opposite side thereof from said inlet support member, said second rupturable member being of a size corresponding with said first rupturable member and including a solid annular flange portion and a plurality of arcuate slots circumscribing a substantially circular central portion with rupture tabs between said arcuate slots;

knife means having a cutting edge forming at least a portion of a circle positioned adjacent said second rupturable member on the side thereof opposite from said first rupturable member; and

an annular metal protection ring attached to the side of said second rupturable member facing said knife means, said protection ring being of a size such that when said second rupturable member flexes into contact with said cutting edge of said knife means, said protection ring prevents said second rupturable member from being cut by said cutting edge but when said second rupturable member ruptures, said protection ring passes through said knife means.

4,434,906

CONTAINER HAVING RESEALABLE OPENING MEANS

Rolf Florczyk, Pfingstmannstrasse 18, D-4350 Recklinghausen, and Reinhold Krischik, Cranger Strasse 200, D4660 Gelsenkirchen-Buer, both of Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,961
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142837
Int. Cl.³ B65D *17/32*
U.S. Cl. 220—268 **22 Claims**

1. A wall structure for a container, comprising a container wall, an opening region in said wall surrounded by a break edge defined by a score line and connecting the opening region to a remaining portion of the wall, said opening region can be ruptured along said score line and separated from said remaining portion by external pressure applied toward an interior of the container to form in said wall an opening defined by said break edge; and an operating member connected to said opening region and located above said opening region so as to overlap said break edge, said opening region after being ruptured remaining in the interior of the container and being slidably displaced by said operating member relative to said opening, said operating member being a plug member formed with a peripheral closing edge region adapted to fluid-tightly close said opening when displaced to be positioned against said opening, said edge region having a configuration similar to the configuration of said break edge and that of said opening, said closing edge region including a form-and force-locking closing edge having a configuration similar to that of said breaking edge and extending parallel to said score line, and a pressure edge directed towards said opening region.

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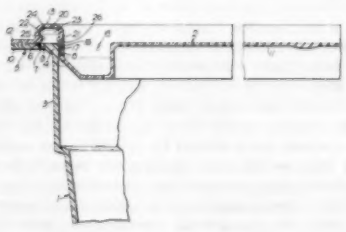
CONTAINER HAVING AN ORIGINALLY SEALED CONDITION WHICH CAN BE OPENED AND THEREAFTER CLOSED

Ole Ingemann, Ryslinge, Denmark, assignor to A/S Haustrup Plastic, Langeskov, Denmark

Filed Dec. 6, 1982, Ser. No. 446,879
Claims priority, application Sweden, Dec. 7, 1981, 8107310
Int. Cl.³ B65D *17/40*
U.S. Cl. 220—276 **64 Claims**



1. The combination of a container member and lid member in which the lid member is initially sealingly engaged with the container member and is removable from the container member to open the latter and is replaceable to close the container member, said container member including a body having a mouth, said mouth including a strip of annular extent secured to said lid member, a first of said members being provided with an annular weakening notch in the vicinity of said strip where

the mouth of the container member is secured to the lid member, said combination being separable at said notch to separate a part of said mouth and the lid member together with said strip from said body, to provide two separated parts which can be reengaged by replacement of said lid member with the separated strip secured thereto onto said container member, said notch being positioned radially inwards of said strip and upon rupture of the notch forming a locating surface for replacement of the lid member on said container member, one of said members including a U-shaped portion extending at least partially around the periphery of said one member for insertion of a portion of the other of said members thereinto in the reengaged position of replacement of the lid member on said container member, the insertion of said portion of the other of said members into the U-shaped portion causing engagement of said members at respective surfaces one of which is said locating surface and the other of which includes means for providing snap engagement with said locating surface.

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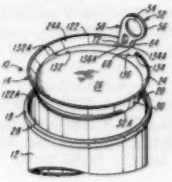
CONTAINER HAVING INTEGRAL OPENING MEANS

William L. French, Hillsboro, Ohio, assignor to Buckeye Molding Company, New Vienna, Ohio

Continuation of Ser. No. 273,333, Jun. 15, 1981, abandoned. This application Apr. 29, 1983, Ser. No. 487,599

Int. Cl.³ B65D *17/40, 17/34*

U.S. Cl. 220—276 **15 Claims**



1. A one piece plastic container comprising a tubular container body, an easy-open end closure closing one end of said body, and a first weakened line of plastic extending completely around said end closure and connecting said end closure to said body, said end closure being removable by completely tearing said first weakened line, said end closure comprising a center panel, a sloping side wall surrounding said center panel and spanning the distance axially and diametrically of said body between said center panel and said first weakened line, a second arcuate weakened line of plastic located entirely within the boundry of said end closure and spaced from said first weakened line, said second weakened line having ends terminating in said end closure, a straight third weakened line extending perpendicularly from said first weakened line partway along said sloping side wall in the axial direction of said body, said third line having one end joining said first weakened line, a fourth weakened line extending between the other end of said third weakened line and one end of said second weakened line, said fourth weakened line joining to said other end of said third weakened line at an obtuse included angle, a pull tab connected to said side wall in spaced relation to said center panel said pull tab comprising a plate-like body having a bottom surface confronting a substantially parallel to said center panel and a top surface spaced from said bottom surface, said pull tab having a side edge surface extending along a diameter of said container aligned with said third line and having a height substantially equal to the length of said third line, an adjacent outer edge surface of said pull tab being integrally connected to said sloping wall so that one corner joining said edge surfaces is substantially diametrically aligned with the point of intersection of said third line and said fourth line.

4,434,909

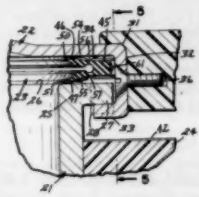
PRESSURE COOKER INTERLOCK

Richrd B. Ott, Eau Claire, Wis., assignor to National Presto Industries, Inc., Eau Claire, Wis.

Continuation-in-part of Ser. No. 233,842, Feb. 12, 1981, abandoned. This application Oct. 30, 1981, Ser. No. 316,934

Int. Cl.³ B65P *45/00*

U.S. Cl. 220—316 **17 Claims**



1. In a pressure cooker including a receptacle and a cover, safety interlock apparatus comprising:

(a) said receptacle and said cover having annular sealing surfaces disposed in juxtaposition;

(b) interlocking lugs on said cover and receptacle, said cover being rotatable with respect to said receptacle in a first direction between a first position in which said lugs are disengaged and a second, fully locked position;

(c) a resilient gasket disposed between said sealing surfaces, said gasket having upper and lower faces and comprising upper and lower inwardly extending, diverging leg portions with inner peripheral sealing lip portions, and said gasket further having space, radially extending ribs formed on at least one of said upper and lower faces;

(d) said interlocking lugs being so constructed and arranged that in the second position of said cover, a first distance between said sealing surfaces is established such that pressure within said pressure cooker can force the leg portions apart with said sealing lip portions pressed into sealing engagement with said sealing surfaces to thereby permit pressure to build up within said cooker; and

(e) means associated with at least selected ones of said lugs for reducing the distance between said sealing surfaces with the cover located between said first and second positions to a second distance at which at least one of said sealing surfaces engage said ribs of said gasket to compress said leg portions together and prevent a seal from forming between said lip portions and said sealing surfaces, and for preventing rotation of said cover toward said first position from said second position so long as the distance between said sealing surfaces is greater than said second distance.

4,434,910

SEALING DEVICE AND PROCESS FOR A METAL PACK

Jacques Groult, Verneuil, France, assignor to Safet-Embamet Lethias, Villeneuve-la-Garenne, France

Filed Dec. 10, 1982, Ser. No. 451,933

Claims priority, application France, Dec. 14, 1981, 81 23266

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—358 **9 Claims**

1. A sealing device for a cylindrical metal pack having a

total opening and comprising a recipient, a pressed-out cover, the recipient having an inner peripheral surface devoid of an inner radial flange and defining the opening of the recipient, and the cover having an outer cylindrical surface which directly cooperates with the inner peripheral surface of the recipient when the cover is inserted in the recipient, said device comprising at least one annular groove formed in one of two elements consisting of the cover and the recipient, at least one sealing element of a partly O-section shape and composed of a copolymer resin formed and adhered in situ in said groove, said groove being located in a region of the recipient and cover in which region occurs a rubbing between cooperating portions of said outer surface of the cover and said inner surface of the recipient when the cover is placed in position in and removed from the opening of the recipient.

4,434,911

LABEL FEED CONTROL SYSTEM

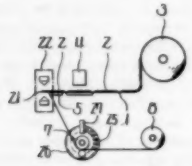
Yasuhiro Sakura, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,307

Claims priority, application Japan, Aug. 14, 1980, 55-111980; Aug. 14, 1980, 55-111981; Aug. 15, 1980, 55-112441

Int. Cl.³ B65H *5/28, 7/02*

U.S. Cl. 221—2 **9 Claims**



9. A label feed control system comprising:

a driver means for driving a feed means which transports a paper base ribbon with labels stuck thereon;

a separator means for peeling said label off said base ribbon;

a label detector disposed in the vicinity of said separator means for detecting the front edge of said peeled-off label;

an incremental feed means for controlling the operation of said driver means such that said base ribbon is fed for a certain amount after said label detector has detected the front edge of said peeled-off label;

an excessive feed detection means provided with a setting of an excess detection feed amount which is larger than a length which said base ribbon travels after the ribbon feed has started until the front edge of said label is detected in normal operation, and adapted to count said excess detection feed amount on starting the ribbon transportation; and

a gate means for activating said incremental feed means on completion of the count operation if a front edge detection signal has not been issued by said label detector during the count operation of said excessive feed detection means.

4,434,912

ACCUMULATOR FOR VENEER FEEDER

Charles L. Larson, deceased, late of Jackson County, Oreg., and by Rocket L. Larson, executor, 606 Benning Dr., Tampa, Fla. 32541

Filed Aug. 13, 1981, Ser. No. 292,716

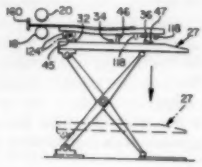
Int. Cl.³ B65H *1/04, 1/14*

U.S. Cl. 221—227 **10 Claims**

5. Apparatus for feeding veneer sheets to a dryer comprising:

an elevated power-driven substantially horizontal pinch roll mechanism for feeding veneer sheets into the dryer,

an elevatable platform means on the feed side of such pinch roll mechanism having a support plane for supporting a stack of veneer sheets and having a set of opposite sides substantially paralleling the pinch roll mechanism, multiple elongate hoist bars extending in the direction of said sides of the platform means and spaced laterally over the expanse of said platform means, means mounting said hoist bars on said platform means, said mounting means for said bars including means for shifting under power each bar between a lowered position which is no higher than said support plane and a raised position disposed above said



support plane, the hoist bars collectively in said raised position defining a plane located above said support plane,

a pair of holding bars disposed laterally outwardly of said opposite sides of said platform means, and means mounting said holding bars independently of said platform means, the mounting for said holding bars including means for shifting them from an inoperative position disposed remotely from the sides of the platform means to an operative position disposed closely adjacent the sides of said platform with the platform means in an elevated position.

4,434,913

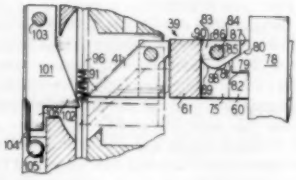
CYCLICAL MECHANICAL DISPENSING MECHANISM

Lucien J. Wroblewski, 8438 N. Kedvale Ave., Skokie, Ill. 60076

Filed Oct. 1, 1981, Ser. No. 307,486

Int. Cl.³ B65G *59/00*

U.S. Cl. 221—267 **18 Claims**



1. Apparatus for cyclically dispensing elements individually from a serial feed path comprising:

a finger means having a leading edge for engaging a lead element in said feed path,

a resiliently biased latch means having a gate edge for extending into said feed path to halt passage of said lead element from said feed path,

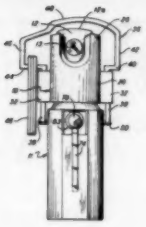
a drive means for cyclically stroking said finger means though a motion path, and

a cam means associated with said finger means, said cam means comprising a cam follower slidable over a fixed cam surface in one stroke direction of said finger means for passing said finger means whereby said leading edge passes from an initial position to engage said lead element and draw it past said gate edge against the bias of said latch means, and then said cam follower is rotatable relative to said cam surface and said finger means in another stroke direction of said finger means such that said leading edge releases said lead element and returns to said initial position during each stroke cycle.

4,434,914
PERSONAL DEFENSE ACTUATOR

Philip Meshberg, 2500 S. Ocean Blvd., Palm Beach, Fla. 33480

Filed Jun. 30, 1981, Ser. No. 279,202
Int. Cl.[3] B67D 5/32; B65D 83/00
U.S. Cl. 222—153 4 Claims



1. A directional applicator for a self-defense product comprising:

a. a container having a bottom, side walls and a top;

b. a valve mounted to the top of said container, an actuating stem, having an axial dispensing bore, for said valve, projecting outwardly from said container;

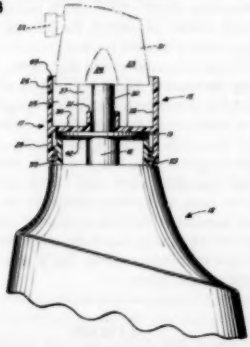
c. an actuator comprising a first part having therein a spray nozzle disposed on the stem of said valve with said nozzle in communication with said bore and a second actuator part fixedly mounted to said container; and

d. a key-ring mounted to said second part, which is fixed to said container, for axial sliding movement along the applicator between a position where it is adjacent to said actuator and a position where it is spaced from said actuator sufficiently to permit a thumb or finger to be inserted between said key-ring and actuator to operate said actuator thereby providing a safety feature to prevent accidental actuation.

4,434,915
CHILD-RESISTANT FINGER PUMP DISPENSER

Donald C. Kirk, Jr., Midlothian, Va., assignor to Ethyl Products Company, Richmond, Va.

Filed Dec. 24, 1981, Ser. No. 334,340
Int. Cl.[3] B65D 83/41
U.S. Cl. 222—153 2 Claims



1. An assembly for dispensing fluids comprising:

(a) a generally elliptical container having a neck portion with at least two opposed thread members having undercut portions adjacent their terminal ends;

(b) a reciprocating pump including a pump housing having an annular flange at its upper end received in said container;

(c) a stem extending out of the upper end of said pump housing;

(d) a dispensing actuator member received on the upper end of said stem and having a spray nozzle projecting from the side thereof;

(e) a closure-guide member having a transverse wall portion which abuts said flange and a central opening receiving said stem, and a lower skirt portion provided with at least two thread members having harpoon-shaped portions at their leading ends on its inner wall which are received in said undercut portions of said container thread members, and an integrally formed upper guide collar portion which extends over the lower portion of said dispensing actuator member when said actuator member is in the uppermost position;

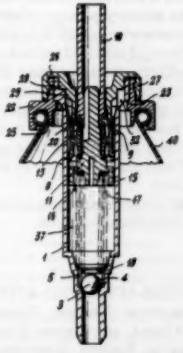
(f) said dispensing actuator member and said upper guide collar portion having opposed slidable, guiding surfaces that prevents rotation of said dispensing actuator member in said upper guide collar portion throughout the full reciprocating limits of said actuator member;

(g) said container thread members being so positioned on said neck and said closure guide member thread members being so positioned on said lower skirt portion that when they are interlocked said spray nozzle cannot be rotated and is oriented parallel with respect to the major axis of said elliptical container.

4,434,916
MANUALLY OPERATED LIQUID DISPENSING PUMP

Tomaso Ruscitti; Giovanni Albini; Roberto Torretta, and Andrea Incerti Baldi, all of Milan, Italy, assignors to S.A.R. S.p.A., Teatino, Italy

Filed Dec. 31, 1981, Ser. No. 336,189
Claims priority, application Italy, Jan. 7, 1981, 19026 A/81
Int. Cl.[3] G01F 11/36
U.S. Cl. 222—321 1 Claim



1. A manually operated pump for the delivery of viscous liquid stored within a container upon which said pump is mounted, said pump comprising:

a ring nut mounted on a mouth of said container, said ring nut including a first annular shoulder and an annular seal extending into said container;

a pump body comprising a hollow cylinder having an axis and a ring at one end, said ring resting upon said first shoulder of said ring nut for supporting said pump body in the axial direction, said ring having a pressure equalization opening, said hollow cylinder having a second end extending into said container and including an annular internal valve seat and a product drawing tube coaxial with said cylinder and communicating with said cylinder via said valve seat;

a ball valve in said second end and engageable with said valve seat;

a closure ring mounted on said ring nut and having a center circular opening coaxial with said pump body;

a hollow delivery stem extending through said central opening of said closure ring, said hollow stem having a lower end positioned inside said pump body, said lower end of said stem including a first annular projection having a first annular downwardly extending lip, said lower end of said stem and said first lip together defining walls of a first annular concave seat;

a shaped body in said pump body, said shaped body having a cylindrical mid-portion and an upper end extending into said hollow stem, said upper end of said shaped body including a delivery passage whereby said liquid may be introduced into said hollow stem at said lower end thereof, said shaped body having a lower end including an annular guide portion having an outer diameter substantially equal to an inner diameter of said hollow cylinder of said pump body, whereby said hollow stem and shaped body are guided in the axial direction, said mid-portion of said shaped body including a second annular projection having a second annular upwardly extending lip, said cylindrical mid-portion and said second lip together defining walls of a second annular concave seat spaced from said first seat by a first distance;

conical spring means extending between said ball valve and said lower end of said shaped body for biasing said ball valve into engagement with said valve seat and for biasing said shaped body and said hollow stem in a direction away from said valve seat; and

a soft elastic seal positioned in said pump body between said first and second annular concave seats, said seal comprising:

(a) an inner cylindrical portion closely surrounding said mid-portion of said shaped body in a slidable manner, the axial height of said inner portion being less than said first distance, whereby said seal is axially movable between a first position in which an upper end of said inner portion is inserted into said first concave seat so as to open said delivery passage of said shaped body, and a second position in which a lower end of said inner portion is inserted into said second concave seat so as to seal said delivery passage of said shaped body,

(b) an outer cylindrical portion adjacent the inner cylindrical walls of said hollow cylinder of said pump body, said outer portion having axial ends bent into engagement with said inner cylindrical walls of said hollow cylinder of said pump body so as to form annular seals therewith, and

(c) an annular connecting portion connecting said inner and outer cylindrical portions.

4,434,917

TRIGGER-ACTUATED ATOMIZER

Tadao Saito; Takamitsu Nozawa; Shuzo Endo; Yoshiyuki Kakuta; Riichi Ogawa, and Tetsuro Kaneuchi, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

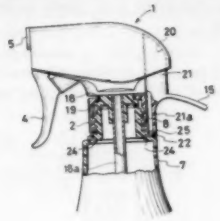
Filed May 26, 1981, Ser. No. 267,049
Int. Cl.³ B67D *5/40*
U.S. Cl. 222—383 **8 Claims**

1. A trigger-actuated liquid dispenser comprising:

a liquid receiving container having a body and a neck extending from said body;

means received about said neck and coupled to said body in a predetermined position for forming an engagement member which includes a projection extending outwardly from said body; and

atomizer pump including a pump body, a means for coupling said pump body to said neck, means including a trigger for delivering fluid through said pump body from said container and producing an atomized fluid, and means formed in said pump body for receiving said engagement member such that said pump body is oriented in a predetermined position with respect to said container body and for preventing relative rotation between said pump body and said



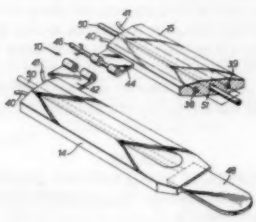
container body, said projection being positioned to abut against an operator's hand when gripped about said container body to operate said trigger.

4,434,918

BOARDING APPARATUS AND METHOD

Michael J. Hodges, High Wycombe, England, assignor to Detexomat Machinery Limited, England

Filed Jan. 22, 1982, Ser. No. 341,638
Int. Cl.³ D06C *5/00*
U.S. Cl. 223—75 **23 Claims**



1. Hosiery boarding apparatus comprising a pair of flat, elongated boarding forms onto which hosiery legs are to be stretched, said forms extending lengthwise parallel to one another, hinge means located remote from free, hose-receiving ends of said forms interconnecting said forms, means for effecting a hinging movement about an axis parallel to said forms whereby said forms can be selectively brought into and out of a contiguous, superposed hose-discharge relationship, and said forms at their free ends including outwardly ejectable tongues, said ejectable tongues being telescopically mounted at the said free ends and operable when said forms are superposed for advancing toe ends of hosiery mounted on said forms forwardly, said apparatus further including hosiery dispensing means operable when said toe ends are introduced into a nip thereof to draw said hosiery from the forms with the hosiery legs lying one on the other.

4,434,919

MULTIPLE-POSITION SPARE TIRE MOUNT

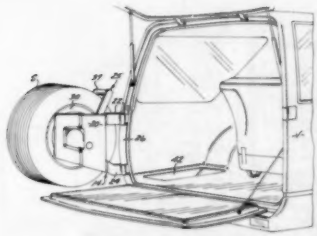
Allan L. Flowers, Del Mar, Calif., assignor to Nissan Design International, Inc., La Jolla, Calif.

Filed Sep. 24, 1982, Ser. No. 422,708
Int. Cl.³ B62D *43/02*
U.S. Cl. 224—42.21 **6 Claims**

1. In an automotive vehicle having a rear door, a multiple-position mount for a spare tire, comprising:

a tire support member secured alongside one edge of the rear door frame to swing on a generally vertical axis from an

inside-stored position generally parallel with a tire well, the tire well being of the type for holding a tire in its upright position parallel and adjacent to a sidewall of a vehicle and inside said vehicle, a tire-removing position exterior of the vehicle and to one side of the door opening, and an outside-stored position outwardly of the closed rear door and generally parallel thereto;



anchoring means for retaining said tire in its inside-stored position; and

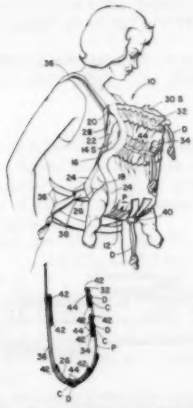
lock means interposed between said tire support and said vehicle for retaining said tire in its outside-stored position whereby said tire may be selectively retained in either its inside-stored or outside-stored position.

4,434,920

SOFT ORTHOPEDIC POUCH-TYPE INFANT CARRIER

Ann A. Moore, Evergreen, Colo., assignor to Snugli, Inc., Evergreen, Colo.

Filed Feb. 22, 1982, Ser. No. 350,877
Int. Cl.³ A47D *13/02*
U.S. Cl. 224—160 **9 Claims**



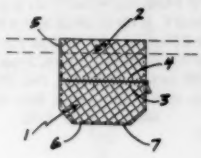
1. In an infant carrier of the type having front and rear soft fabric panels connected along the bottom and at spaced points on both sides to define an open-topped pouch with a seat in the bottom, leg openings at the sides of the seat and armholes above the leg openings; and, supporting means connected to one of the panels for carrying said pouch on the chest or back, the improvement which comprises: adjustment means arranged transversely of the seat operative upon actuation to narrow the distance separating the leg openings, and belt-forming means connectable alongside each leg opening operative upon actuation to maintain the maximum spread relation therebetween permitted by said seat width adjustment means.

4,434,921

HANDBAG AND BELT CARRIER

Rose G. Santhoff, 8144 Jefferson, Kansas City, Mo. 64114

Filed Dec. 14, 1981, Ser. No. 330,709
Int. Cl.³ A45C *11/10*
U.S. Cl. 224—253 **6 Claims**



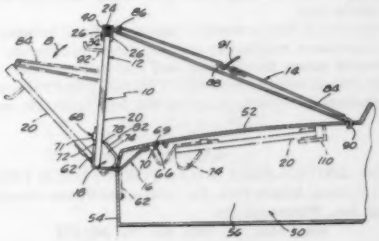
1. A receptacle comprising a combined handbag and belt pouch having concealed support means attached to an inner surface and located within said receptacle, said support means being adapted to the insertion of a carrying strap and being located at a position, measured from the uppermost portion of said receptacle, which is between one-half and one-quarter of the vertical distance between the uppermost portion of said receptacle and the lowest portion of said receptacle.

4,434,922

FLEXIBLY-SUPPORTED, PIVOTABLE LOAD CARRIER FOR VEHICLES

Donald H. Brandsen, 11401 Culver Blvd., Los Angeles, Calif. 90066, and Griffith L. Hoerner, 2211 Montana Ave., Santa Monica, Calif. 90403

Filed May 18, 1983, Ser. No. 495,748
Int. Cl.³ B60R *9/06*
U.S. Cl. 224—314 **24 Claims**



12. A load carrier for use with a vehicle having a cavity defined by vehicle interior surfaces, said load carrier comprising:

a frame for supporting a load thereon when in a load-supporting position, said frame comprising

a pair of legs having first and second ends,

a cross-member, and

means for pivotally connecting said second end of each said leg to a different end of said cross-member to permit said legs to pivot into a folded position in juxtaposition with said cross-member for storage and to permit said legs to pivot into position to support said cross-member in said load-carrying position;

a pair of cams, each said cam being attached to a different frame leg adjacent to said first end thereof;

a pair of straps;

adjustable connector means associated with each of said straps for varying the effective length of said straps, for connecting one end of each said strap to a different one of said legs adjacent its first end or of said cams and for connecting the other end of each said strap to at least one

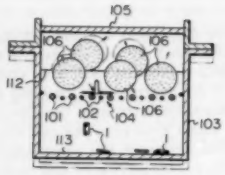
of said cavity-defining, interior surfaces, said straps being in contact and aligned with said cams to permit rotation of said cams along said straps, each member of each associated leg, cam and strap lying in a plane substantially perpendicular to that of said frame.

4,434,923

APPARATUS FOR SEPARATING CASTINGS INTO NECESSARY AND UNNECESSARY PIECES

Kazuo Nagata, and Susumu Ishii, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,985
Claims priority, application Japan, Jun. 20, 1981, 56-95756
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—97 **4 Claims**



1. An apparatus for separating castings into necessary and unnecessary portions, which comprises:

a conveyance frame providing a conveyance mechanism including a plurality of bar members juxtaposed in parallel and extending in the direction in which the castings are conveyed;

at least one downwardly open cover member disposed above said conveyance mechanism and spaced away therefrom by a distance great enough to permit the passage of the castings conveyed along said conveyance mechanism;

a plurality of freely movable masses confined between said conveyance mechanism and said cover mechanism; and

vibration means for vibrating said conveyance frame;

said castings being separated into necessary and unnecessary portions by impacting against said freely movable masses.

4,434,924

DUAL DRIVEN FEED ROLLS FOR A PUNCH PRESS

Mario Varisco, Allison Park, Pa., assignor to Vamco Machine & Tool, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1982, Ser. No. 363,079
Int. Cl.³ B65H *17/22, 17/26*
U.S. Cl. 226—120 **10 Claims**

1. Apparatus for intermittently feeding a workpiece comprising,

an input shaft supported for rotation at a continuous preselected speed,

an output shaft having a first end portion and a second end portion,

cam drive means drivingly connecting said output shaft first end portion to said input shaft for generating oscillating rotational movement of said output shaft through a preselected angle of rotation,

feed means for intermittently feeding a preselected length of the workpiece in a selected direction,

said feed means including a first feed roll and a second feed roll,

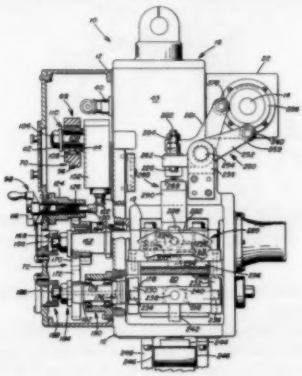
a frame for supporting said first and second feed rolls in overlying relation to engage the workpiece therebetween,

rotation transmission means drivingly connected at one end to said output shaft second end portion and at an opposite end to said first feed roll,

said rotation transmission means being operable to transmit the oscillating rotational movement of said output shaft to said first feed roll to oscillate said first feed roll through said preselected angle of rotation,

pivot means for supporting said second feed roll in said frame for movement toward and away from said first feed roll,

coupling means for drivingly connecting said rotation transmission means to said second feed roll to oscillate said



second feed roll through an angle of rotation corresponding to the angle of rotation of said first feed roll and thereby drive both said first and second feed rolls, and

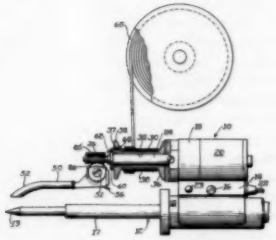
said coupling means drivingly connected to said second feed roll to facilitate movement of said second feed roll toward and away from said first feed roll as rotation is transmitted to said second feed roll.

4,434,925

STRIP SOLDER FEEDING AND RE-WINDING DEVICE

Joseph M. Jacobs, 212 Via LaCircula, Redono Beach, Calif. 90277

Filed Mar. 9, 1981, Ser. No. 241,602
Int. Cl.³ B23K *3/02;* **B65H** *17/26, 75/00*
U.S. Cl. 226—127 **6 Claims**



1. Apparatus for feeding strip solder to the heated tip of a soldering iron comprising:

a spool carrying a coiled supply of strip solder defining an opening along its longitudinal axis and having a front wall defining an aperture; a motor having a shaft extending through the spool opening and supporting said spool for free-wheeling rotation about said shaft;

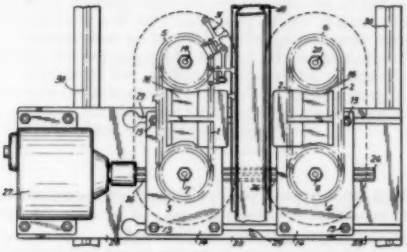
stop means secured to said shaft adjacent to the front wall and defining an aperture alignable with the spool wall aperture whereby a length of strip solder inserted through said aligned apertures mechanically connects the motor and the spool to wind a fresh coiled solder supply on to the spool.

4,434,926

TRANSPORTATION DEVICE, IN PARTICULAR FOR SHAPED, FLEXIBLE MATERIAL

Bruno Paoli, Fornacette-Pisa, Italy, assignor to International Paper Company, New York, N.Y.

Filed Sep. 15, 1981, Ser. No. 302,394
Int. Cl.³ B65H 17/34
U.S. Cl. 226—172 3 Claims



1. A device for transporting along its length a continuous web, including rotary means for clamping, the rotary means having two separate, opposing clamp groups being substantially equal and symmetrical, the clamp groups grasping the opposite longitudinal edges of the web to be transported and wherein said rotary means for clamping comprises, for each one of said two groups of clamps, an endless chain, supported on a carrying reel and on a drive reel, the two carrying reels being powered by a motor system, and wherein each one of said clamps in said groups comprises two opposing and symmetrical levers, pivoting at one of their ends on strip elements carried by said endless chain, the other free end of each one of said levers carrying a roller, each one of said levers having a head between its ends the two heads of the two levers of each clamp forming a clamp for grasping the web material to be transported, cam guide elements which engage said roller which cause the rotation of the respective lever around said lever pivoting end, to thereby actuate said clamps.

4,434,927

PENETRATOR INTERFACE ADAPTER CONCEPT

John R. Butler; Gerald D. Shock, both of White Plains, and Norman J. Saunders, Nanjemoy, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 276,856
Int. Cl.³ B21J 15/18
U.S. Cl. 227—9 5 Claims

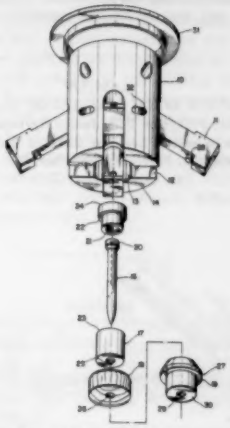
1. An assembly for use with a conventional percussion gun for guiding a driven hollow sampling penetrating needle to drive the needle a predetermined distance through the wall of a container to allow a sample to be extracted from the container comprising:

(1) a housing including a chamber adapted to be connected and firmly attached to the gun;

(2) guide carrier means to center the needle in the housing and

(3) shock absorber means adapted to be positioned at the forward end of the said housing, having an opening therethrough, and where the opening is aligned with the said needle and said opening is smaller than the diameter of the needle so that the outer wall of the needle engages the opening in the shock absorber so that the shock absorber determines the depth of penetration of the needle into the container,

where the housing is fitted with multiple pivoted means for clamping that functions to secure the shock absorber means to the housing and is adapted to hold the shock



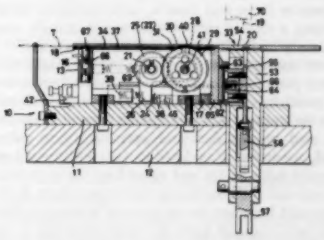
absorber means in position against the target piece during the shooting operation.

4,434,928

TAPE FEEDING DEVICE FOR STAPLING MACHINES

Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K K, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,613
Claims priority, application Japan, Dec. 9, 1980, 55-176346[U]
Int. Cl.³ B27F 7/19
U.S. Cl. 227—16 3 Claims



1. In a stapling machine for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having means for applying a fastener part with a backing plate to the fabric a work station, and means for feeding a reinforcing tape into the work station in overlying relation to the backing plate, the improvement wherein the tape feed means comprises a roller means having means on its circumference for continuously engaging the tape, and means for rotating said roller means in one direction, said roller means, upon rotation, feeding a predetermined length of the reinforcing tape into the work station and wherein said rotating means comprises an air cylinder, a rack operatively connected to said air cylinder for reciprocating movement when said air cylinder is operated to rotate a bell crank connected to said rack, a pinion rotatable in its own axis and drivingly meshing with said rack, a drive gear coaxial with said pinion, a one-way clutch means in said pinion for transmitting motion of said pinion to said drive gear, a driven gear rotatable in its own axis and drivingly meshing with said drive gear, said roller means comprises a pair of feed

rollers coaxially connected to and disposed one on each side of said driven gear, and said means on said roller means comprises a pair of axially spaced rows of pointed projections extending radially outwardly from the respective circumferences of said feed rollers and spaced circumferentially apart from each other.

4,434,929

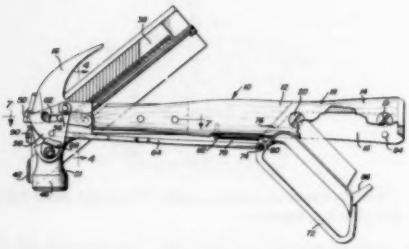
HAMMER WITH MAGAZINE NAIL FEED

Neil F. Keener, P.O. Box 573, Jemez Springs, N. Mex. 87025

Continuation-in-part of Ser. No. 221,911, Dec. 31, 1980. This application Nov. 27, 1981, Ser. No. 325,184

Int. Cl.³ B25C *1/02, 3/00*

U.S. Cl. 227—115 **14 Claims**



1. A hammer comprising an elongated handle including an elongated transverse head on one end defining an outwardly facing terminal end impact face on one end portion of said head, elongated generally straight magazine means carried by said hammer and inclined relative to said handle and head, said magazine means, head and handle being disposed in generally the same plan with said magazine means extending through the junction of said head and handle intermediate the opposite sides of said head and handle and with said magazine means including one discharge end opening outwardly of the side of said head remote from said handle, said magazine means slidingly receiving a row of side-by-side longitudinally staggered and transversely extending nails therein for successive lateral movement of said nails longitudinally of said magazine means to a first feed position at said discharge end wherein each nail in the feed position is oriented generally parallel with said head and with its tip end spaced from a plane normal to said nail and containing said impact fact and preparatory to subsequent longitudinal movement of said nail to a set position wherein the nail is oriented with its tip end extending through said plane normal to said nail and containing said impact face, feed means mounted on said hammer for movement between a first position behind and engaged with the head of a nail in the feed position and a second position displaced in the direction in which the feed position nail tip end faces for displacing the feed position nail from the feed position to the set position.

4,434,930

PROCESS FOR PRODUCING REINFORCED STRUCTURAL ARTICLES

George Trenkler, East Providence, R.I., and Richard G. Delagi, Sharon, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 15, 1981, Ser. No. 311,574

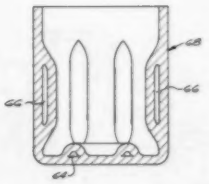
Int. Cl.³ B23K *19/00*

U.S. Cl. 228—118 **10 Claims**

1. A process for producing a reinforced structural member comprising the steps of

providing at least two flat sheets of malleable metal, the sheets of metal having a sintering temperature, disposing a selected pattern of stop-off material between at least two adjacent sheets, the stop-off material being thermally decomposable to generate a gas when raised above a given temperature, the stop-off material comprising first and second portions, the first portion generates gas at the sintering temperature and the second portion generates gas above a predetermined temperature higher than the sintering temperature,

squeezing and solid state green bonding the sheets one to another,



heating the sheets to a sintering temperature to improve the metallurgical bond therebetween and generate gas from decomposition of the first portion, and

heating the sheets above the predetermined temperature to cause gas generation from decomposition of the second portion and concomitant separation and deformation of the sheets contiguous to the stop-off material.

4,434,931

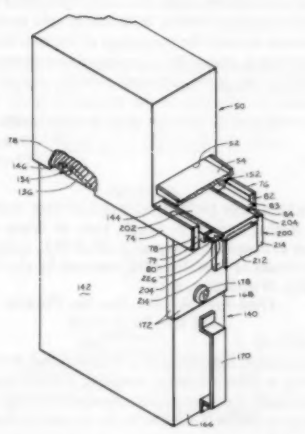
CASH BOX FOR PAPER CURRENCY

James W. Hunt, and Raymond A. Johnson, both of Hot Springs, Ark., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Nov. 12, 1981, Ser. No. 320,767

Int. Cl.³ G07F *9/06*

U.S. Cl. 232—15 **7 Claims**



1. Bill handling apparatus comprising a bill-accepting unit;

a bill-receiving container removably secured to the bottom of the bill-accepting unit having an opening at the top through which a bill entered in the bill-accepting unit may be pushed down for flatwise stacking of bills in the container,

the bill-accepting unit having means for pushing a bill entered in the unit down into the container,

the container having a closure for its top opening movable between a closed position in which it may be locked for precluding unauthorized access to the container and an open position for allowing bills to be pushed down into the container;

the closure in its open position extending outwardly from the container;

and means for releasably locking the container to the bill-accepting unit and precludng its removal from the bill-accepting unit unless the closure is closed including retaining means on the unit engageable by the opened closure where it extends outwardly from the container,

the container being applicable to the bottom of the bill-accepting unit with the closure closed, the closure then being adapted to be opened for delivery of bills to the container and for interlocking of the closure where it extends from the container with said retaining means on the bill-accepting unit for locking the container to the bottom of the bill-accepting unit, the container being removable from the bottom of the bill-accepting unit on closing the closure with attendant disengagement of the closure from said retaining means.

4,434,932

AIR-CONDITIONER CONTROL SYSTEM FOR AUTOMOBILES

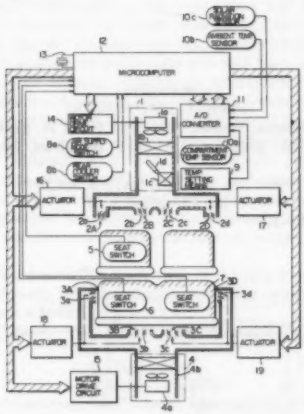
Kiyoshi Hara, Oobu; Yasufumi Kojima, Gifu, and Teiichi Nabeta, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 6, 1982, Ser. No. 395,340

Claims priority, application Japan, Jul. 7, 1981, 56-106571

Int. Cl.³ F24F *7/00;* **B60H** *1/00*

U.S. Cl. 236—49 **12 Claims**



1. An air-conditioner control system for an automobile which supplies a stream of air conditioned by an air-conditioner to a vehicle compartment of the automobile such that the temperature in the vehicle compartment approaches a desired temperature, said system comprising:

shifting means whereby the direction of flow of said conditioned air stream supplied to said vehicle compartment is gradually shifted continuously or, progressively between a first flow direction including the direction of at least one object occupant and a second flow direction excluding the direction of said object occupant;

compartment temperature sensor means for generating an electric signal indicative of an actual air temperature in said vehicle compartment;

temperature setting means for generating an electric signal to adjust a desired temperature of a vehicle compartment air temperature to be controlled;

signal generating means operable by said occupant to generate an electric signal indicative of a given control command; and

control means responsive to said electric signals from said compartment temperature sensor means, said temperature setting means and said signal generating means for determining a shift position of said shifting means in accordance with a control amount related to said compartment temperature and said desired temperature and said control command and applying an electric control signal indicative of said shift position to said shifting means thereby selecting the flow direction of said conditioned air stream between said first and second flow directions said control means maintaining said shift position at a given position in response to said control command irrespective of said control amount and determining said shift position in accordance with said control amount when said control command ceases to exist.

4,434,933

GAS FLOW RATE CONTROL SYSTEM

Akira Tamura, Aichi, Japan, assignor to CKD Controls Limited, Aichi, Kojima

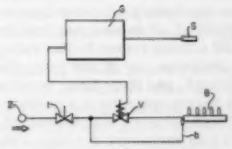
PCT No. PCT/JP81/00049, § 371 Date Nov. 2, 1981, § 102(e) Date Nov. 2, 1981, PCT Pub. No. WO81/02615, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 6, 1981, Ser. No. 320,975

Claims priority, application Japan, Mar. 8, 1980, 55-29631

Int. Cl.³ G05D *15/00;* **F16K** *51/00*

U.S. Cl. 236—75 **1 Claim**



1. A gas flow rate control system comprising:

a temperature sensing means for monitoring an environment to be controlled;

an electromagnetic-type flow rate control valve means including a return spring for urging a valve stem to its closing position, a plunger for driving the valve stem, and a pair of energizing coils for generating magnetic attractive forces so as to move the plunger against the force of the return spring;

an energizing-current control circuit means for applying energizing currents to said pair of energizing coils, said currents being in the form of pulse signals which are increased or decreased in response to temperature changes detected by said temperature sensing means, said currents controlling the opening and closing of said flow rate control valve;

said pulse signals being alternately applied to said pair of energizing coils so as to repeatedly reverse the directions of magnetization caused by said pair of energizing coils, wherein magnetic hysteresis is eliminated from said flow rate control valve; and

said pulse signals alternately applied to said pair of energizing coils being different in duration so as to unbalance said magnetic attractive forces generated by said respective energizing coils, and thereby causing said plunger to oscillate at the zero point of magnetic force which occurs at the moment of shifting from the magnetic force generated by one of said pair of energizing coils to the magnetic force generated by the other of said pair of energizing coils, wherein static friction of the plunger of said flow rate control valve is eliminated.

4,434,934

SYSTEM FOR HEATING THE OPERATORS CABIN OF A MACHINE POWERED BY AN INTERNAL COMBUSTION ENGINE

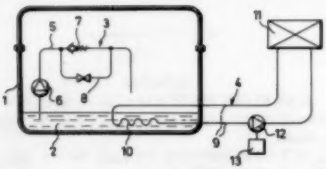
Gottfried Moser, Gladbach; Walter Nau, Cologne, and Ernst-Dieter Neumann, Aachen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,372

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123633

Int. Cl.³ F22B *3/06*

U.S. Cl. 237—12.3 R **12 Claims**



1. A system for heating the operator's cabin of a machine powered by an internal combustion engine, comprising a first oil conduit system operating at a predetermined high pressure, the engine including an engine compartment having an enclosed oil pan, said oil conduit system being located wholly within said enclosed oil pan and including a high pressure hydraulic pump for feeding oil under heat and high pressure from the reservoir of oil in said pan and back into said oil reservoir, said oil conduit system further including a throttling element at the discharge side of said pump for heating the oil passing therethrough, and there being provided a closed, second oil conduit system operating at a pressure lower than said predetermined high pressure, said second oil conduit system including a first heat exchanger disposed within said enclosed oil pan in the engine compartment in heat exchange relationship with the oil heated by said first oil conduit system, a second heat exchanger located in the operator's cabin and a circulating pump for circulating oil through said closed oil conduit system, whereby the oil passing through said closed oil system is heated via said first heat exchanger for supplying heat to the operator's cabin via said second heat exchanger, and whereby any leakage of oil from said first oil conduit system operating at said predetermined high pressure, and any leakage of oil from said first heat exchanger, is completely confined within said oil pan to thereby avoid exposure of the engine to danger due to an uncontrolled loss of oil.

4,434,935

POWDER, ESPECIALLY METALLIC POWDER FOR MARKING WORKPIECES

Georg Roeder; Helmut Sachs, both of Frankfurt am Main, and Dieter Hajok, Hattersheim, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

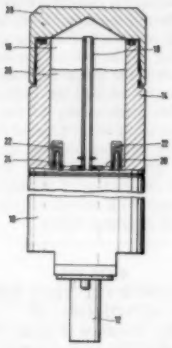
Filed Apr. 11, 1979, Ser. No. 29,357

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819091

Int. Cl.³ B05B *7/32*

U.S. Cl. 239—85 **7 Claims**

1. In combination therewith a marking torch, said marking torch having a nozzle, a container, powder in said container, a tube connecting said nozzle to said container, agitating means in said container, carrier gas means communicating with said container, said powder consisting of a blend of fine powder and of coarse powder, said coarse powder functioning to prevent said fine powder from agglomerating, said coarse powder having a particle size of 30–80μ, said fine powder having a particle size of 1–10μ, said fine powder being of a size and weight to be carried by the carrier gas from said container and through said nozzle for marking the workpiece to comprise the sole powder marking means of said torch, and said coarse powder being of a size and weight to be unaffected by the



carrier gas and to remain in said container without being conveyed to said nozzle to function solely as a means for preventing agglomeration.

4,434,936

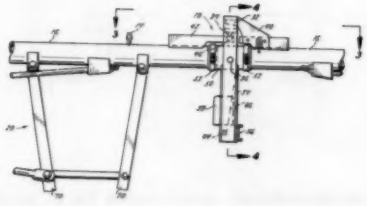
IRRIGATION SYSTEM

John A. Chapman, Wahoo, Nebr., and Owen W. Sherwin, Fort Wayne, Ind., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Sep. 22, 1981, Ser. No. 304,577

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—178 **20 Claims**



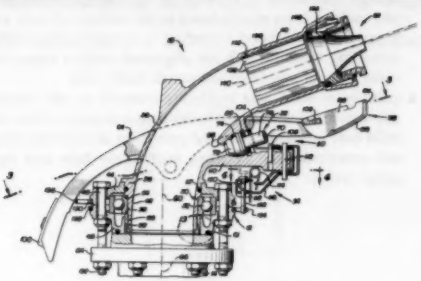
16. A coupling for joining conduit sections of an irrigation system for irrigating a field, said system having a conduit for extending over the field to be irrigated, said conduit including conduit sections joined end-to-end by said coupling, and said irrigation system further including support towers spaced along the length of the conduit for supporting and moving the conduit over the field to be irrigated, the conduit having a series of dispensers along its length for dispensing liquid fed through the conduit onto the field: said coupling comprising means responsive to a relative movement of said adjacent conduit sections under load for sensing said load within the system, said sensing means including a pair of pivotaly mounted yoke members, at least one of said yokes having an end extending substantially perpendicular to the conduit, and means responsive to said sensing means to initiate corrective action in the system to relieve said load, said yoke outer end having means to actuate said corrective means.

4,434,937

REACTION DRIVE SPRINKLER

Edward J. Pitchford, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed May 12, 1982, Ser. No. 377,552
Int. Cl.³ B05B *3/08*
U.S. Cl. 239—230 **36 Claims**



1. A rotatable water sprinkler, comprising:
a range tube having a flow path therethrough for receiving water from a water supply pipe and for discharge projection of the water generally in a lateral direction with respect to the supply pipe, said range tube further defining a relatively small bleed opening for bleed passage of a relatively small stream of the water from said flow path;
means for mounting said range tube at the end of a water supply pipe for rotation with respect thereto and for reception of water from the pipe into said flow path;
a drive nozzle mounted on said range tube in communication with the bleed passage and movable between first and second positions for discharge projection of the relatively small stream respectively in first and second generally lateral directions with respect to the supply pipe;
drive means pivoted with respect to said range tube and including a pair of oppositely oriented deflector spoons for respective interruption of the relatively small stream when said drive nozzle is in said first and second positions; and
a reversing mechanism responsive to the rotational position of said range tube for moving said drive nozzle between said first and second positions.

4,434,938

AROMA SYSTEM

Evelyn S. Rosenkrantz, and Edward Rosenkrantz, both of 4915 Tyrone Ave., Sherman Oaks, Calif. 91403

Filed Apr. 5, 1982, Ser. No. 365,214
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—274 **1 Claim**

1. An improved aroma emitting device for cooperative use with a toilet handle, comprising in combination:
a housing consisting of,
a refillable fluid reservoir having
a cover detachably fastened to said reservoir, said cover having
a pump means depending from said cover and communicating with said fluid reservoir for generating
a mist proximate said cover;
activating means extending from said cover and having
a handle attached thereto for engagement with said toilet handle so as to generate said mist when said toilet handle is activated;
said housing having
a support bracket attached to said refillable reservoir portion thereof for adjustable engagement with
a hanger bracket attached to
a toilet tank wall and proximate said toilet handle, said support bracket being slidably detachably affixed to said hanger bracket by
a lock mechanism, said pump means comprised of
a valve member affixed to
a pump body, said valve member being remote from said cover and extending below the level of said fluid reservoir, said pump body having
a longitudinal bore there through and said bore having
a first diameter portion and a second diameter portion, said first diameter portion abuting said valve chamber and said second diameter portion abuting said cover, said longitudinal bore further having
a shoulder at the mid portion of said pump body, contained within said longitudinal bore is said activating means comprised of
a plunger having
a collar at its mid portion,
a third diameter portion extend from said cover, and
a fourth diameter housed within said longitudinal bore, and having
a pump seal attached to said fourth diameter, said pump seal being larger in diameter than said first diameter portion and slidingly engaged with said first diameter;
a spring coaxial with said fourth diameter and housed within said second diameter, abutting said shoulder and said collar so that when said activating means is operated said spring is compressed, a said valve chamber having
a first ball valve, and
a second, non biased ball valve,
an intake port in communication with said fluid reservoir, and
a common port in communication with said first diameter portion of said longitudinal bore said intake port having
a filter element therein for the removal of particulate matter from said fluid entering said pump means;
a first passageway serves to connect said intake port with said first ball valve, and
a second passageway serves to connect said first ball valve with said common port;
a third passageway serves to connect said second ball valve with said common port;
a fourth passageway in said pump body serves to connect said second ball valve with
a fifth passageway in said cover which commmunicates with
a spray nozzle affixed to said cover whereby activation of said toilet handle causes said fluid to be expelled from said spray nozzle.

4,434,939

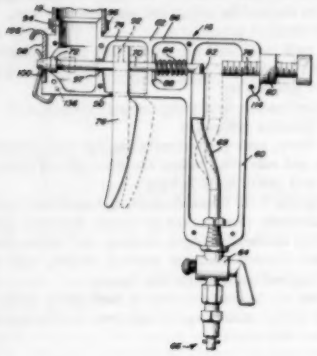
APPLICATOR GUN

James L. Stankowitz, 6946 Exline Rd., Jacksonville, Fla. 32222

Division of Ser. No. 174,591, Aug. 1, 1980, Pat. No. 4,364,521. This application Dec. 16, 1982, Ser. No. 450,389
Int. Cl.³ B05B *7/04*
U.S. Cl. 239—345 **2 Claims**

1. An applicator gun for the application of a fluent material to a surface and comprising a gun housing having a pressurized

fluid inlet connected to a supply tube, a rigid discharge tube extending longitudinally of the gun housing and connected to the inlet and having a free distal end with a pressurized fluid discharge nozzle connected thereto, trigger means for displacing the discharge tube longitudinally of the gun housing, a tip on the gun housing, said tip having a discharge orifice receiving the nozzle which forms a closure for the orifice, said gun housing including a fluent material discharge chamber surrounding a portion of said free end of said discharge tube and communicating with the orifice in the tip, the discharge chamber adapted to receive fluent material to be dispensed, said displacing means moving the discharge tube and nozzle away from the orifice to enable discharge of fluent material from the chamber through the orifice with the pressurized fluid discharging from the nozzle entraining said fluent material for depositing it onto a surface, said gun housing including a lateral recess removably mounting the tip, said tip including a plate having an opening therein forming said orifice and receiving a portion of said nozzle, said plate being slidably received in said recess, and spring clip means retaining the plate in said recess.



4,434,940

INSULATED FUEL INJECTION NOZZLE DEVICE AND METHOD FOR MANUFACTURING SAME

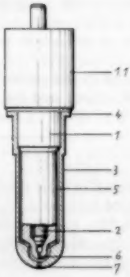
Heinz Kupper, Troisdorf-Sieglar, and Helmut Busch, Lohmar, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,673

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004033

Int. Cl.³ F02M *53/04*

U.S. Cl. 239—397.5 **9 Claims**



1. A fuel injection nozzle device which is constructed such that its nozzle spray hole temperature can be maintained at a reduced level during use, said device comprising

an injection nozzle body which includes at least one spray hole,

a hood which is disposed in a generally surrounding relationship with respect to said injection nozzle body, said hood being constructed to provide an annular gap between it and said injection nozzle body in the vicinity of each said spray hole, said hood including a separate spray orifice extending therethrough for alignment with a respective spray hole of said injection nozzle body, and

a quantity of solid heat insulating material in said annular gap adjacent each aligned spray hole and spray orifice, the solid heat insulating material providing an enclosed channel communicating between each spray hole and each spray orifice.

4,434,941

SEALING SYSTEM FOR THE AIR FEED OF A ROTATABLE AIR NOZZLE SYSTEM

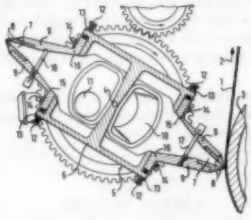
Gerhard Wohlfeil, Monheim, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 327,874

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048134

Int. Cl.³ B05B *15/08*

U.S. Cl. 239—587 **7 Claims**

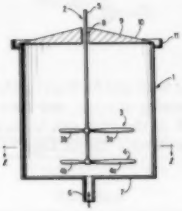


1. In combination; a system for sealing and axially feeding air to an air nozzle system for the removal of excess liquid coating material from a moving web of material and for smoothing the coating, the air nozzle system comprising a housing rotatable about its longitudinal center including a pair of air slot nozzles disposed diametrically opposite one another and comprising two stationary air feed ducts sealed from one another by gaskets of resiliently compressible material with rectangular cross section and which are seated on thrusting surfaces perpendicular to the longitudinal center axis of the air nozzle system at the end of the stationary air feed ducts, the gaskets are overlapped with radial clearance by gasket retaining and pressing means, and the gasket retaining and pressing means are pressed against the gaskets of resiliently compressible material by pressure surfaces provided on a rotatable hollow journal of the air nozzle system perpendicular to the longitudinal center axis of the air nozzle system, the journal having two separate air ducts each leading to a slot nozzle and serving to connect one of the air feed ducts to one nozzle through one air channel, rotation of the journal connecting said one nozzle and its channel to the other nozzle.

4,434,942
PROCESS AND APPARATUS FOR ATTRITION CARRIED OUT IN A HUMID MEDIUM

Jean-Louis Cardini, Paris, France, assignor to Societe Metallurgique Le Nickels-S.L.N., Paris, France

Continuation of Ser. No. 94,085, Nov. 14, 1979, abandoned. This application Dec. 23, 1981, Ser. No. 333,751
Claims priority, application France, Nov. 15, 1978, 78 32217
Int. Cl.³ B02C *17/16*
U.S. Cl. 241—21 **18 Claims**



1. A process of wet attrition of ore comprising:
(a) grinding the ores to a pulp having a particle size distribution such that 80% by weight of the particles have a diameter from about 30 to about 0.4 mm; and
(b) subjecting the pulp to wet attrition by agitating the pulp in a slightly turbulent medium, said agitation being conducted at an impeller Reynolds number of from about 1,000 to about 5,000, the impeller Reynolds number being defined as:

$$N_{ReImp}=(U\times d\times\rho)/\mu$$

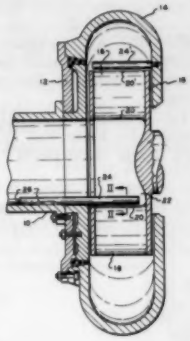
wherein
U=rotational speed of the impeller, rpm;
ρ=density of the pulp being pumped, gm/cm^3;
d=diameter of the impeller, cm; and
μ=viscosity of the pulp being pumped, centipoise;
the agitation of step (b) being carried out by stirring the pulp with at least two impellers mounted at a distance apart on a shaft, each of the impellers comprising at least two horizontally disposed blades, the blades having equal length and being so arranged that the impellers pump the preground ore towards the spaced defined between the impellers, the impellers having a carrying coefficient substantially constant throughout their length such that the voluminal flow rate per area element is constant whatever the position of this area element within the area produced by the rotation of each impeller.

4,434,943
PUMP INTAKE CUTTER HEAD

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

Continuation of Ser. No. 168,145, Jul. 14, 1980, abandoned, which is a continuation of Ser. No. 18,105, Mar. 7, 1979, abandoned. This application Mar. 18, 1982, Ser. No. 359,432
Int. Cl.³ B02C *19/12, 23/36*
U.S. Cl. 241—46.08 **1 Claim**

1. In combination with a centrifugal liquid pump for transferring and comminuting a slurry including aquatic growths wherein the pump includes a rotatable impeller having structure defining radial passages and radial passage inlets, a suction pipe having a passage having upper and lower internal portions, connection means releasably attaching said suction pipe to said pump, said pump having its axis of impeller rotation aligned with said pipe, a cylindrical intake chamber defined by the radial passages of said pump aligned with said pipe passage, a static shear element in the form of an elongated cantilevered bar mounted at one end upon said pipe with its other end projecting substantially into said chamber adjacent the pump passage inlets in shear relation with the structure defining said passages and passages' inlets, said bar being located in the

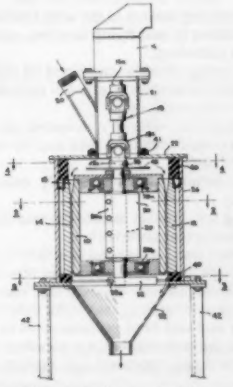


lower interior portion of said pipe and chamber wherein the density of said slurry due to the effect of gravity is the greatest.

4,434,944
MASS (INDUCTIVE) REACTANCE VIBRATORY MILL OR CRUSHER EMPLOYING MECHANICAL DRIVE FORCE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Oct. 28, 1981, Ser. No. 316,045
Int. Cl.³ B02C *2/06, 19/00*
U.S. Cl. 241—258 **13 Claims**



1. A vibratory mill for grinding material comprising
a driving member,
eccentrically weighted drive shaft means for supporting said driving member for freedom of motion rotationally about the longitudinal axis of the drive shaft means,
means for suspending said drive shaft means for freedom of motion laterally with respect to said longitudinal axis,
a slave member having an inside wall,
means for supporting said slave member in proximity to said driving member and said slave member,
means for rotatably driving said drive shaft means to generate cycloidal quadrature related vibratory force components therein, said force components causing said driving member to both roll around on and vibrate against the inside wall of said slave member, and
means for feeding said material into the gap formed between the driving and slave member,

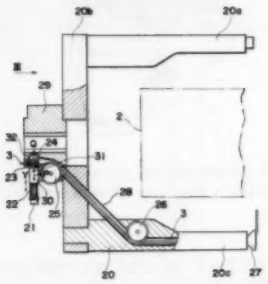
both shear and radial vibratory forces being applied to said material to effect the grinding thereof.

4,434,945

WINDING APPARATUS

Tokuhito Hamane, Hirakata, and Masaaki Tasai, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 9, 1982, Ser. No. 347,268
Claims priority, application Japan, Feb. 19, 1981, 56-24110
Int. Cl.³ B65H *59/00*; D01H *7/24*
U.S. Cl. 242—7.14 **3 Claims**



1. A winding apparatus for winding wires and the like around a winding form, said apparatus comprising:

a flyer member having a wire passage for passing a wire therethrough onto the winding form, rotatable about a rotational axis, said flyer member including a boss portion; and

means for applying tension to the wire by a centrifugal force during rotation of said flying member, said tension applying means including:

a slider member slidably supported on said flyer member for sliding movement in a radial direction with respect to said rotational axis,

a roller member, rotatably mounted on said slider for rotative contact with the wire and for radial movement with said slider,

a bracket member having radially extending openings therein,

a pin fixing said bracket member to said slider member for radial movement therewith,

bolt members fixed at one end to said boss portion, extending through said openings in said bracket member and having head portions opposite said one end, and

coil springs surrounding said bolts between said bracket member and said head portions so as to urge said roller member through said bracket member and slider member toward said rotational axis against said centrifugal force.

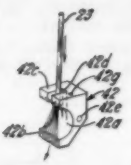
4,434,946

STRAND GUIDE FOR PACKAGING APPARATUS

David F. Lewin, Newark, Ohio; Louie J. Haynes, Amarillo, Tex., and Lynne B. Beach, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1983, Ser. No. 481,531
Int. Cl.³ B65H *54/08, 54/28, 57/04*
U.S. Cl. 242—18 G **4 Claims**

1. A strand guide movable back and forth longitudinally of a winding collet as part of a package builder, said strand guide comprising a block member having a face normally engaging a package being wound from a multifilament strand guided by the block member, said block member having a recess in said face whereby it is provided with a lower squeegee or strand-flattening portion below the recess and an upper strand-reciprocating portion above the recess, the strand-reciprocating portion having a generally vertically extending slot opening to said face, and the multifilament strand being wound into a package on the winding collet being received in said slot,



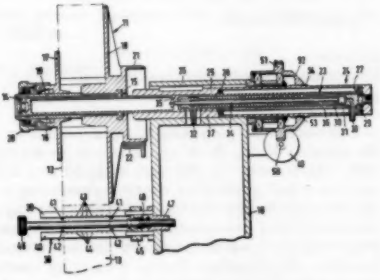
transversely moved back and forth along the winding collet by the strand-reciprocating portion, and flattened due to transverse displacement of the filaments by said strand-flattening portion as it is wound onto the package.

4,434,947

AXIALLY DISPLACEABLE REEL HOLDER FOR PACKING MACHINE WEBS

Heinz H. Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 184,445, Sep. 5, 1980, Pat. No. 4,366,932. This application Jul. 29, 1982, Ser. No. 403,207
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937661
Int. Cl.³ B65H *19/12, 25/26*
U.S. Cl. 242—57.1 **6 Claims**



1. A reel holder mounting arrangement for a packaging apparatus, especially for wrapping groups of cigarettes into cigarette packs, comprising:

(a) a machine base (**10**),

(b) a reel holder (**11**) for receiving a replaceable web roll of packaging material,

(c) an axle (**16**) embodying means for removably mounting the reel holder at one end thereof,

(d) a hollow elongated bearing section (**23**) coaxial with and extending from the other end of the axle,

(e) fluid piston and cylinder means (**30, 31**) disposed within the bearing section and coupled between the axle and the machine base for implementing coarse axial extensions and retractions of the axle and a web roll carrying reel holder mounted thereon to enable safe web roll replacement,

(f) means including tubular outer housing (**24**) surrounding the bearing section for mounting the bearing section to the machine base, and

(g) precision gear drive means mounted directly between the outer housing and the machine base for bidirectionally axially displacing the outer housing to implement the fine-adjusting of the operating position of the reel holder relative to the machine base to ensure proper web feed.

4,434,948

APPARATUS FOR PRODUCING OVERLAPPING BAND ROLLS FROM SUPERPOSED OVERLAPPING FLAT WORKPIECES

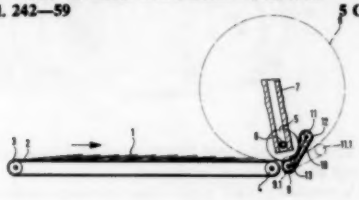
Richard Feldkämper, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 15, 1981, Ser. No. 302,689

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3035114

Int. Cl.³ B65B *63/04;* B65H *17/02, 5/02*

U.S. Cl. 242—59 5 Claims



1. Apparatus for producing overlapping band rolls from superposed overlapping flat sacks, bags or like flat workpieces, comprising: a freely rotatable winding core, a conveyor means, a pivotable frame which carries rollers at least at opposite ends and is disposed downstream of the conveyor means for delivering the workpieces, and a driven endless conveyor belt which passes over the rollers and lies against the freely rotatable winding core or the overlapping band roll being formed thereon, characterised in that the frame is mounted on a pivot shaft that divides the frame into a longer and a shorter lever arm, and in that the ends of the winding core are held in parallel guides extending substantially along lines drawn through the axes of the winding core and the roller which is mounted at the end of the shorter lever arm and which supports the winding core or the overlapping band roll being formed.

4,434,949

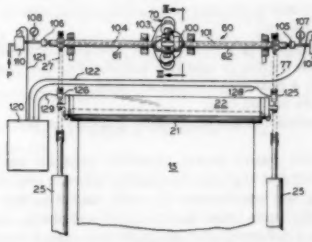
WINDER RIDER ROLL CONTROL

Gerald W. Karr, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 10, 1982, Ser. No. 356,633

Int. Cl.³ B65H *17/12*

U.S. Cl. 242—66 11 Claims



1. In a rider roll assembly including an elongated rider roll, flexible elongated support means for each end of the rider roll, and torsion cross shaft means with the support means engaging the cross shaft means and effective to rotate the cross shaft means in response to movement of the rider roll, the improvement of the cross shaft means comprising first and second rotatable shaft portions interconnected by torque transmitting means having means for adjusting the torque transmitted per unit of relative rotational displacement of the shaft portions, the torque transmitting means including variable pressurizable air bags, and first and second base portions affixed to the first and second shaft portions with the base portions rotatably interconnected by variable pressurizable air bags, the air bags including a first set which undergoes compression during a relative rotation of the first shaft portion with respect to the second shaft portion in the first direction and including a second set which undergoes compression during a relative rotation of the first shaft portion with respect to the second shaft portion in a second direction opposite the first direction and including means for varying the pressurization of at least one of the first and second sets, the means for varying pressurization including conduits connecting a pressure gas source to the first and second sets with variable pressure setting valves associated with the conduits whereby pressure transmitted from the pressure gas source to the first and second sets can be individually controlled and wherein the conduits include rotatable couplings and the sets can be variably pressurized during operation of the assembly.

4,434,950

WINDING-ON DEVICE FOR PAPER SHEETS AND LENGTHS OF TEXTILE

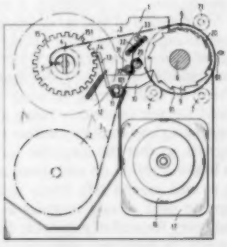
Wilhelm Nünnerich, 33, Kölner Grenzweg, D-4780 Lippstadt, and Peter Schmidt, 41, Ziethenweg, D-4790 Paderborn, both of Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,173

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 8109362[U]

Int. Cl.³ B65H *17/04, 17/22*

U.S. Cl. 242—67.2 7 Claims



1. Apparatus for winding-up of a continuous sheet material such as paper on a take-up roll comprising:

a supply of sheet material;

a take-up roll upon which the sheet material is to be discontinuously wound in relatively large increments;

a drive means comprising a rotatable drive element which rotates incrementally and discontinuously in relatively small increments;

an axially elastically stretchable belt connecting the drive element to the take-up roll to transfer rotational motion from the drive element to the take-up roll when the take-up roll rotates freely but to store energy in the form of elastic tension when the take-up roll is locked against rotation; and

locking means interconnecting the drive element and the take-up roll to normally lock the take-up roll against rotation but to release the take-up roll after the drive element has rotated a predetermined number of said small increments.

4,434,951

FISHING REEL HAVING A MAGNETIC BRAKE AND NON-MAGNETIZABLE BEARING

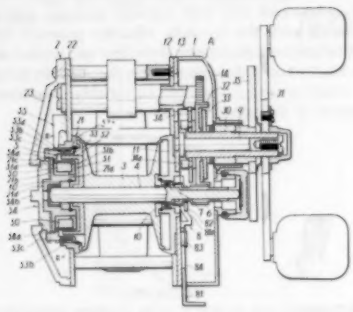
Hideki Nakajima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 22, 1982, Ser. No. 443,690

Claims priority, application Japan, Nov. 26, 1981, 56-176133[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—84.52 B **6 Claims**



1. A fishing reel comprising,

a reel body comprising a pair of first and second separated and opposing side frames which are provided with bearing housings each having a bearing,

a spool shaft having a spool disposed between said side frames at said reel body, said spool shaft being supported rotatably by said bearings to said reel body,

a drive mechanism for driving said spool shaft,

a clutch mechanism for enabling said spool shaft to become freely rotatable with respect to said drive mechanism, and

a brake mechanism for imparting a rotational resistance against free rotation of said spool shaft, said brake mechanism comprising a magnet ring having a plurality of magnets and an electric conductor which is cylindrical and rotatable together with said spool shaft, said magnet ring being fixed to said bearing housing at said second side frame, said electric conductor being disposed opposite to said magnet ring and rotatably within the magnetic field of said magnets, so that the magnetic force by said magnets exerts a braking action on said spool and spool shaft, said bearing at said second side frame being disposed within the magnetic field of said magnets at said brake mechanism and being formed of a metallic bearing comprising a non-magnetic material not magnetizable by said magnets.

4,434,952

POWER RETURNABLE COILABLE RULE CARTRIDGE AND COIL RULE ASSEMBLY EMPLOYING SAME

Frank G. Czerwinski, East Berlin, and Edward C. Rutty, Portland, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sep. 7, 1982, Ser. No. 415,521

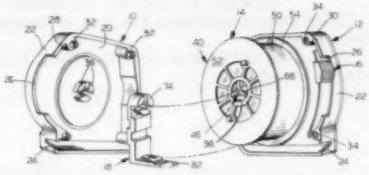
Int. Cl.³ B65H *75/48;* **G01B** *3/10*

U.S. Cl. 242—107 **11 Claims**

1. A cartridge for a coilable rule comprising:

A. a form-sustaining spool having a cylindrical core portion with an axially extending aperture therethrough and annular end walls of greater diameter than said core portion to provide an annular chamber thereabout, the central apertures of said end walls being aligned and of lesser diameter than said core portion;

B. a hub having an elongate post extending axially of said spool and a multiplicity of locking tabs extending outwardly from each end thereof and perpendicularly to the axis of said post, said tabs being adapted for interlocking with the housing in which said cartridge is placed to lock said hub against rotation therewithin, said tabs having lips extending along the inner surface of said end walls about said central aperture and thereby retaining said hub relative to said spool, said hub being freely rotatable within said spool;



C. a recoil spring coiled within said core portion having one end attached to said post; and

D. a measuring blade coiled about said core portion having its inner end secured to the outer end of said spring.

4,434,953

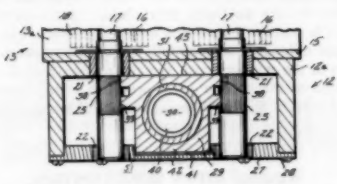
DUAL SPOOL PRETENSIONER

Charles Gemar, Mound, and Robert L. Meisch, Minneapolis, both of Minn., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 2, 1981, Ser. No. 238,070

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107 **4 Claims**



1. A pretensioner for turning the spools to tighten webbing thereon for dual spool safety belt retractors comprising:

a pair of shafts in spaced-apart parallel offset relation, each of said shafts each driving a webbing spool connected thereto and each having a knurled section intermediate the ends thereof;

a case supporting said shafts for operative journalling and location therein of said knurled sections, said case attachable to a dual spool retractor frame;

a chamber in said case;

a pyrotechnic means removably inserted in said chamber; and

deformable piston means operably engaged against said chamber and alignably journalled between said shafts and having an interference fit with said knurled sections whereby, upon linear movement of said piston, said piston means is deformed and said shafts are rotated, turning said spools and tensioning said webbing.

4,434,954

TAPE TENSIONING APPARATUS

Dennis M. Ryan, San Mateo, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,732

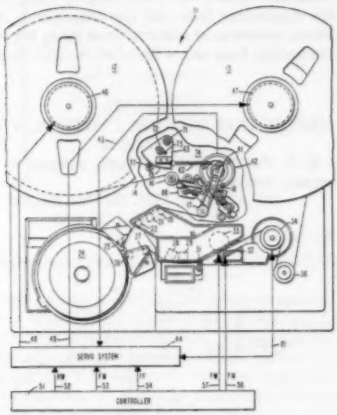
Int. Cl.³ B65H *59/38, 63/02;* **G03B** *1/04;* **G11B** *15/32*

U.S. Cl. 242—189 **9 Claims**

1. A tape tensioning apparatus for a magnetic tape transport including a tape element; a pair of spaced tape moving and anchoring means engaging and anchoring said tape at spaced

points thereon defining a tape segment of variable length, and tension loading means coupled to said tape moving and anchoring means and to said tape segment between said spaced points in first and second operating modes to alter the length of said segment between corresponding first and second predetermined length values and to apply corresponding first and second tensioning forces laterally to said segment, characterized in that:

said tension loading means is arranged to apply at least one of said tensioning forces at substantially the full value



thereof whenever the actual length value of said segment falls within a predetermined operating range of the corresponding predetermined median length value of the segment; and

said tension loading means includes a set including at least one force-transmitting element, said one thereof engaging said tape element and each element of said set engaging at least one other element of said set, each pair of engaged elements being arranged to move only conjointly and in substantially the same direction, so as to avoid frictional shearing motion therebetween.

4,434,955

MAGNETIC-TAPE CASSETTE

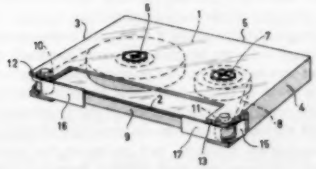
Johannes J. M. Schoenmakers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1982, Ser. No. 386,144

Claims priority, application Netherlands, Jun. 18, 1981, 8102932

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **1 Claim**



1. A magnetic-tape cassette, comprising

a housing having first and second flat parallel major walls (1, 2), two side walls (3, 4), a rear wall (5), and a front side with a front opening between the major walls,

two rotatable reel hubs (6, 7) arranged adjacent each other between the major walls,

a magnetic tape (8) attached to the reel hubs (6, 7), a span (9) of said tape extending along said front opening in the magnetic-tape cassette for cooperation with parts of a magnetic-tape apparatus, said major walls having at least one opening permitting access by elements of the magnetic tape apparatus behind the tape, the span (9) of said magnetic tape which extends along the front opening of the magnetic-tape cassette being movable from an active position, in which it is disposed outside the housing of the magnetic-tape cassette, to an inactive position, in which it is disposed between the major walls (1, 2) of the housing,

at least one front cover (14, 15) near a corner point (12, 13) near the front of the magnetic-tape cassette, and

means for pivoting said cover about a pivotal axis perpendicular to the major walls (1, 2) between an open position and a closed position, in which closed position said cover at least partly covers the front opening of the magnetic-tape cassette, characterized in that

the front cover (14, 15) comprises a thrust portion (16, 17) which during the pivotal movement of the open position to the closed position presses against the span (9) of magnetic tape which extends along the front side and moves the tape from the active position to the inactive position, and

said major walls are arranged such that in the inactive position of said tape the tape is disposed interiorly of said at least one opening,

whereby the edges of said tape are fully covered when the tape is in the inactive position.

4,434,956

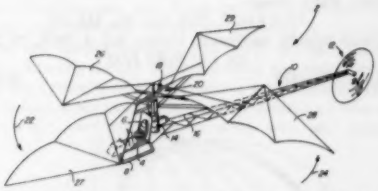
FLEXIBLE HELICOPTER ROTOR AND PITCH CONTROL MECHANISM

Gilbert R. Gonzales, 1314 N. Winstel Blvd., Tucson, Ariz. 85716

Filed Oct. 19, 1981, Ser. No. 312,497

Int. Cl.³ B64C *27/38*

U.S. Cl. 244—17.25 **13 Claims**



1. A flexible helicopter rotor comprising in combination:

a. a vertical rotor axle;

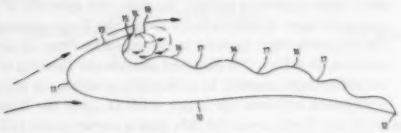
b. means for rotating said vertical rotor axle in a first rotational direction; and

c. a plurality of flexible airfoils secured to and extending radially from said vertical rotor axle, each of said airfoils including a plurality of segments, each of said segments having a trailing edge relative to said first rotational direction, the trailing edge of each of said segments being capable of billowing upward to form an arc for allowing each segment of said airfoils to form a billowing, canopy-shaped surface as said vertical rotor axle is rotated in said first rotational direction, the amount by which any particular segment of an airfoil is allowed to billow being less than the amount by which segments located closer to said vertical rotor axle are allowed to billow.

4,434,957
LOW DRAG SURFACE

Robert R. Moritz, Conyers, Ga., assignor to Rolls-Royce Incorporated, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,449
Int. Cl.³ B64C *3/14, 23/06*
U.S. Cl. 244—35 R **4 Claims**



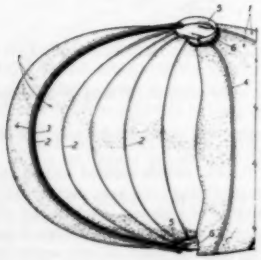
1. A low drag surface having an upstream edge and a downstream edge and having a flow of fluid across the same in a direction from the upstream edge toward the downstream edge, said low drag surface comprising an intermittent linear vortex producing means spaced downstream of the upstream edge and extending transverse to the direction of said flow of fluid across the surface for producing a succession of rolling vortices extending transverse to the flow of fluid, said intermittent linear vortex producing means including a re-entrant discontinuity in the surface, the discontinuity extending transverse to said flow and providing a sheltered leeward face against which each of said vortices may be successively formed; and

means spaced downstream from said discontinuity and defining a ramp parallel therewith, said ramp being inclined outwardly from the surface and causing each of said vortices, when formed against said sheltered leeward face, to be dislodged from the sheltered leeward face to permit another vortex to be formed, the successively formed vortices being allowed to roll in a downstream direction across the surface in succession to reduce the drag on the surface.

4,434,958
METHOD OF CONSTRUCTION FOR A CONTAINER WITH A SYMMETRICAL LOBED STRUCTURE AND CONTAINER CONSTRUCTED ACCORDING TO THE SAID PROCESS

Michel Rougeron, Toulouse, and Jacques Simon, Vigoulet-Auzil, both of France, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed Sep. 5, 1980, Ser. No. 184,448
Claims priority, application France, Sep. 6, 1979, 79 22303
Int. Cl.³ B64B *1/58*
U.S. Cl. 244—126 **10 Claims**



1. A container with an axially symmetrical sturcture adapted to support an overpressure, said container comprising:

(a) an airtight skin having two poles and being formed from gores assembled at connecting lines extending along meridians of the structure, and

(b) meridional unidirectional reinforcement means disposed along the meridian connecting lines and interconnected at either pole,

(c) the gores being made of a material with a low elastic modulus and a large capacity for the plastic elongation at least in the meridional direction thereof,

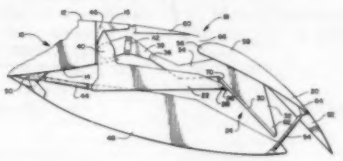
(d) the reinforcement means being made of a material with a high elastic modulus adapted to be plastically deformed outwrdly while maintaining their initial length,

(e) the combination of the materials used to form the gores and reinforcements being effective that, when an overpressure is created inside the structure, the gore material, plastically deforms to cause bulging along the length of the connecting lines and the container is inflated in a lobed, symmetrical spheroid form along the length of the connecting lines and is flattened at either pole.

4,434,959
AIRFOIL FLAP ASSEMBLY WITH FLAP TRACK MEMBER

Peter K. C. Rudolph, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1981, Ser. No. 306,743
Int. Cl.³ B64C *3/50, 9/20*
U.S. Cl. 244—215 **25 Claims**



1. A flap assembly for an airfoil having a forward end, a rear end, a longitudinal axis and a transverse axis, said flap assembly comprising:

(a) a mounting structure located at the rear end of the airfoil, said mounting structure having a track mounting portion at a track mounting location,

(b) a first flap member having a stowed first position at the rear end of the airfoil, and movable rearwardly through an intermediate second position to a fully extended third position,

(c) said flap member having mounted thereto a substantially longitudinally aligned track member operatively connected to said track mounting portion for longitudinal and rotational movement relative thereto, said track member having a forward end and a rear end, said track member being characterized in that with the flap member in the first position, the rear end of the track member is at the track mounting location, and with the flap member in its third position, the forward end of the track member is at the track mounting position,

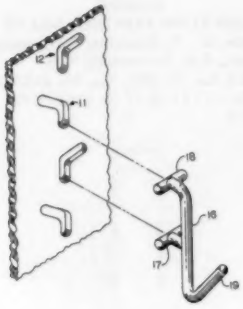
(d) actuating means operatively connected to said flap member at a connecting location spaced forwardly of the forward end of the track member and having a fixed location relative to the flap member, said actuating means being arranged to move said connecting location substantially longitudinally along a first path component generally aligned with the lengthwise axis of the track to move said flap between the stowed position and the intermediate position so as to cause substantial Fowler motion of the flap with relatively little rotation of the lengthwise axis of the track member relative to the mounting structure at the track mounting location, and to move the connecting location along a second path portion, having a substantial upward path component to move the flap between the intermediate position and the third position so as to cause relatively less Fowler motion with relatively greater rotation of the legthwise axis of the track member relative to the mounting structure at the track mounting location.

4,434,960

APERTURED DISPLAY BOARD AND HOOK

Buford E. Berry, 403 Carol Rd., Morgan City, La. 70380

Filed Mar. 25, 1982, Ser. No. 361,771
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—220.4 **16 Claims**



1. An article supporting apparatus comprising, in combination:

(A) a board having a plurality of apertures therein, said apertures being defined by a vertical portion and a transverse portion, said apertures being aligned in a series of rows and columns, the centerline of said vertical portions of said apertures in said rows being in alignment, said transverse portions of vertically adjacent apertures in said columns of apertures being on opposite sides of said vertical portions of said vertically adjacent apertures, and

(B) a hook member comprising

(a) a shank portion having a top end and a bottom end, said shank portion having stop means connected thereto, and

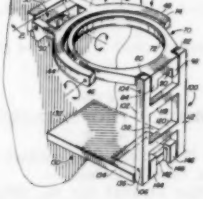
(b) a leg portion connected to said shank portion for receipt of articles to be suspended from said board.

4,434,961

UNIVERSAL PIVOTING AND FOLDING BEVERAGE HOLDER APPARATUS

Thomas M. Hoye, 6850 N. 86th St., Scottsdale, Ariz. 85253

Filed Apr. 25, 1983, Ser. No. 488,030
Int. Cl.³ A47K *1/09*
U.S. Cl. 248—311.2 **20 Claims**



1. Holder apparatus for holding an element, comprising, in combination:

base means for securing the holder apparatus at a fixed location;

hinge plate means pivotally secured to the base means;

support ring means secured to the hinge plate means and pivotal therewith;

holder ring means, through which the element extends, pivotally secured to the support ring means;

support bracket means pivotally secured to the holder ring means remote from the support ring means; and

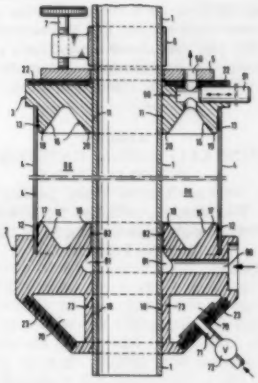
platform means for receiving the element to be held and disposed beneath the holder ring means and pivotally secured to the support bracket means remote from the holder ring means.

4,434,962

FLANGE HAVING AN OUTER AND AN INNER CIRCUMFERENTIAL SEALING FACE AND APPARATUS, COMPRISING SUCH FLANGE, FOR PRODUCING ENVELOPING CASTS ABOUT ELONGATED BODIES

Felix Bleuel, Basel, and Christian Bosshard, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,838
Claims priority, application Switzerland, Feb. 27, 1981, 1334/81; Jan. 5, 1982, 26/82
Int. Cl.³ B29C *1/00*; B29D *3/00*
U.S. Cl. 249—65 **14 Claims**



1. An annular flange of elastomeric material for mounting between two concentric tubular members to define a mold chamber therebetween, said flange having an annular recess near the outer perimeter thereof for receiving an end of the outer of said tubular members, said flange having a through aperture between radially separated inner and outer surfaces and having a radially relieved surface such as to define with an outer surface of the inner of said tubular members a flow gap therebetween, said gap communicating with said through aperture.

4,434,963

SLIDE CLAMP INCLUDING ELEVATION STABILIZER

Pat Russell, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 22, 1982, Ser. No. 452,258
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—7 **7 Claims**

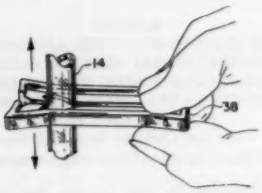
1. A slide clamp comprising:

(a) a platform including first and second ends;

(b) a defined slot through said platform, extending generally between said first and second ends of said platform, said slot including a defined tubing receiving portion near said first end, dimensioned so as not to significantly restrict the lumen of tubing disposed therein, thereby forming an on mode, said receiving portion narrowing to a defined tubing crimping portion dimensioned to severely restrict the lumen of tubing disposed therein, thereby forming an off

mode, wherein said clamp is manually adjustable on the tubing between said receiving and crimping portions; and

(c) a clamp stabilizer projecting from said platform into said receiving portion of said slot at a first end side of said receiving portion, said stabilizer including a base at said first end side and narrowing to a tip at its distal end, opposite said base;



(d) wherein the distance between said first and second ends is substantially greater than the thickness of said platform and further wherein the distance between said first end and said stabilizer tip is not greater than about one third the distance between said first and second ends;

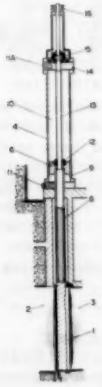
(e) such that said slide clamp is selectively positionable and maintainable at any elevation along the length of the tubing while said slide clamp is in the on mode.

4,434,964

SELF-CLOSING CYLINDRICAL GATE FOR HYDRAULIC TURBO-MACHINE

Paul Hudon, 9100 de Charente, Tracy, Quebec, Canada

Filed Feb. 16, 1982, Ser. No. 349,316
Claims priority, application Canada, Mar. 12, 1981, 372837
Int. Cl.³ F16K *31/145*
U.S. Cl. 251—62 **12 Claims**



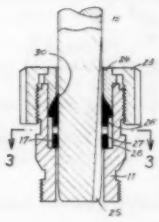
1. An operating device for a cylindrical gate as used to protect and seal a hydro-electric installation including hydraulic turbo-machines, comprising: a set of hydraulic servomotors installed above the circumference of the cylindrical gate; operating rods, each with one end connected to the gate and the other end associated with a servomotor; each servomotor including a closed chamber to contain a pressurized fluid, a piston capable of moving in translation in said chamber, and dividing said chamber into two compartments, the piston being moved by the operating rod; a minimum of three servomotors being interconnected; those of said servomotors, that are connectd to the synchronizing device, including a nut, thrust bearings and a threaded rod going through the nut and the thrust bearings being used to control the translation of the piston in the chamber, and to change said translation into a motion of rotation; said synchronizing device including mechanical transmission means allowing synchronization of said motion of rotation.

4,434,965

LOW FLOW CONTROL VALVE

Leo I. St. Martin, Jr., N. Hampton, N.H., assignor to H. D. Baumann Assoc., Ltd., Portsmouth, N.H.

Filed Jan. 22, 1982, Ser. No. 342,511
Int. Cl.³ F16K *47/00*; F16L *55/02*
U.S. Cl. 251—121 **4 Claims**



1. Low flow control valve comprising:

a. a housing having fluid communicating inlet and outlet ports and a central vertical passage interconnecting said inlet and outlet ports;

b. an orifice member suitably retained within said vertical passage of said housing and having a central longitudinal bore, sleeve-type sealing means tightly retained within said orifice member;

c. a valve plug slidingly engaged within said longitudinal bore of the orifice member and within said sleeve-type sealing means, said valve plug having a fluid conducting profile at its lower extremity extending exterior of said sealing means to conduct fluid flow when in the upper travel position and an upper solid cylindrical portion disposed to tightly fit within the sleeve-type sealing means when in the lower travel position to effect closure of said orifice member;

d. said sleeve-type sealing means having a reduced exterior diameter portion and a straight cylindrical central bore slidingly engaging said valve plug, one or more passages disposed perpendicularly to said central bore to provide fluid communication between said central bore and said reduced exterior diameter portion to enable fluid pressure to urge said sealing means against the valve plug when in the lowest travel position in order to enhance the sealing capabilities.

e. operating means attached to said valve plug.

4,434,966

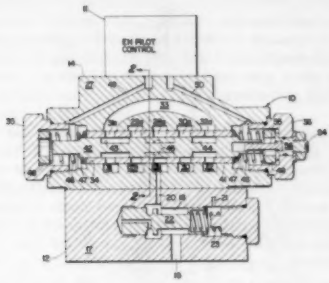
ELECTRO-HYDRAULIC PROPORTIONAL CONTROL VALVE

Theodore S. Zajac, Bay Village, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 31, 1981, Ser. No. 249,538
Int. Cl.³ F16K *3/26*; F15B *13/043*
U.S. Cl. 251—205 **6 Claims**

6. A control valve comprising a housing, said housing having a first port and a second port, a bore intersecting said first and second ports, a valve spool slidably disposed in said bore, said spool including a smooth cylindrical outer peripheral surface, said spool being axially movable in said bore between first and second positions, said spool having land means hydraulically isolating said first and second ports when said spool is in said first position, said spool having groove means establishing metered fluid pressure communication between said

first and second ports through a metering area when said spool is in said second position, said groove means including an axially extending groove in said spool, the juncture of said groove and said outer peripheral surface defining metering edges on said spool, said metering edges on said spool defining said metering area, adjustment means adjustably changing said



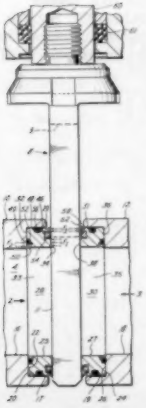
metering area independently of axial movement of said spool relative to said sleeve, said adjustment means including link means for rotatably adjusting said spool, and connector means between said link means and said spool restraining relative rotational movement between said spool and said link means and permitting relative axial movement between said spool and said link means.

4,434,967

VALVE SELF-RELIEVING SEATS

Ralph W. Vanderburg, Longview, Tex., assignor to Axelson, Inc., Longview, Tex.

Filed Aug. 23, 1982, Ser. No. 410,304
Int. Cl.³ F16K *3/00*
U.S. Cl. 251—328 **16 Claims**



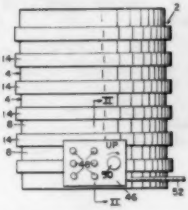
1. A valve for use with fluids under pressure, comprising:
a valve body having an inlet and an outlet with a chamber therebetween;
a seat located in said valve body;
a closure member in said chamber having flow means for cooperating with said seat for preventing fluid flow in the closed position and for permitting fluid flow in the open position;
moving means for moving said closure member from said closed position of preventing fluid flow to said open position of permitting fluid flow, said moving means including means for permitting the fluid pressure to move said closure member to said closed position; and
seal means for providing sealing engagement between said seat and said valve body and between said seat and said closure member, said seal means including leak means for permitting flow of fluid only in the direction from said inlet to said chamber between said closure member and said seat when said closure member is positioned near said closed position, whereby the fluid pressure urges said closure member to said closed position.

4,434,968

MAGNETIC JACK

Raymond H. Smith, Rte. 2 - 5AAA, Larned, Kans. 67550

Filed Sep. 28, 1981, Ser. No. 306,250
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—1 **1 Claim**



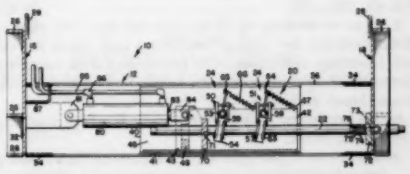
1. A magnetic jack comprising:
a. a body member consisting of a series of sections connected together for limited telescopic extension in a direction parallel to the lift axis of the jack,
b. A pair of electromagnets carried between each successive pair of body sections, the magnets of said pair being affixed respectively to said related pair of body sections, being coaxial and having a magnetic axis parallel to the jack lift axis, and having confronting poles which are of like polarity when electric current is supplied thereto,
c. means for furnishing electric current to said electromagnets, whereby the like polarity of said confronting poles generates a repulsion force tending to extend said related body sections telescopically, and
d. a dashpot device interconnecting each successive pair of body sections, whereby to cushion and retard the extension and retraction movements of that pair of body sections.

4,434,969

ROD AND PIPE PUSHER-PULLER APPARATUS

Dennis Von Ruden, Owatonna, Minn., assignor to General Equipment Co., Owatonna, Minn.

Filed Jul. 13, 1981, Ser. No. 282,428
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 R **6 Claims**



1. A rod and pipe pulling and pushing apparatus, comprising:
(a) an elongated frame having a front end and a back end;
(b) a carriage assembly moveably mounted to said frame;

(c) means for reversibly moving said carriage assembly relative to said frame;

(d) means mounted on said carriage assembly, for gripping said pipe, said pipe being movable in a longitudinal direction with respect to said frame; and

(e) means for guiding said pipe, said guide means including a longitudinally yieldable front guide plate attached near said front end, whereby said front guide plate yields thereby signaling impact by a bore enlarging cup commonly attached to a pipe being pulled to allow stopping of said moving means to prevent damage to said apparatus.

4,434,970

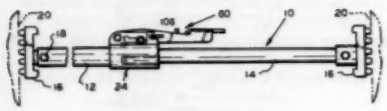
ADJUSTABLE LOAD BRACING BAR

John D. Boland, Jackson, and Fred C. Kresky, Richland, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Continuation of Ser. No. 255,650, Apr. 20, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 471,069

Int. Cl.³ B66F *1/04*

U.S. Cl. 254—108 **8 Claims**



1. In an adjustable load bracing bar adapted to be supported between spaced partitions, in combination, an elongated bar having outer ends, said bar comprising first and second elongated portions each having inner ends telescopingly interconnected, a plurality of teeth defined on said first portion forming a tooth track substantially parallel to the length of said first portion, a lever support defined on said second portion adjacent the inner end thereof, a hand operated lever pivotally mounted upon said lever support pivotal between retract, engage and extend positions, a slot defined on said lever support extending parallel to said positions, a dog, a first pivot pivotally mounting said dog upon said lever, said dog having a second pivot slidably received within said slot, biasing means mounted on said lever biasing said dog toward said tooth track, said dog engaging said track at and between said lever engage and extend positions, and partition engaging means defined upon said bar outer ends, pivoting of said lever from said engage to said extend positions translating said second dog pivot within said slot and translating said dog in a direction telescopingly extending said first portion relative to said second portion.

4,434,971

DRILLING RIG DRAWWORKS HOOK LOAD OVERSPEED PREVENTING SYSTEM

Richard N. Cordrey, Rancho Palos Verdes, Calif., assignor to Armco Inc., Middletown, Ohio

Filed Feb. 11, 1981, Ser. No. 233,561

Int. Cl.³ B66D *1/48*; E21B *19/00*

U.S. Cl. 254—273 **21 Claims**

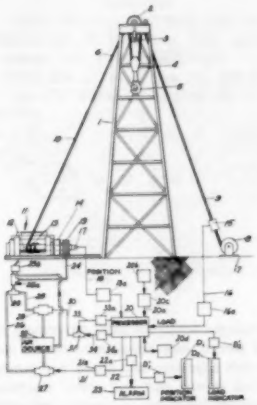
1. In an oil drilling rig of the type having a traveling hook block mounted for vertical movement and means for raising and lowering said block, the improvement in combination therewith comprising means for preventing runaway lowering of said block including:

means producing a signal representative of the load carried by said block;

means producing a signal representative of the vertical position of said block;

brake means for slowing downward travel of said block; and

processor means including means for calculating from said position signal a signal representative of the downward speed of said block, and means utilizing said speed and load signals to produce an electrical signal for insuring safe stopping of block travel within the braking capability of said brake means, said processor means including means for continually calculating from said speed and load signals an energy value which must be dissipated during a braking stop for that speed and load and means responsive to said electrical signal for activating said brake means for slowing downward travel of said block when the calculated energy value reaches a predetermined value representative of the maximum energy absorbing capability of said brake means.



4,434,972

HOISTING WINCH

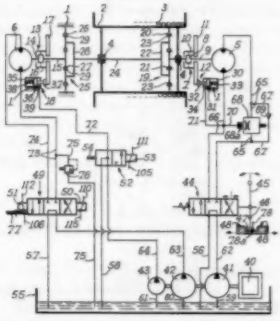
Georges M. Charles, Saint Vallier, France, assignor to Potain Poclain Materiel (P.P.M.), France

Filed Oct. 6, 1981, Ser. No. 309,111

Claims priority, application France, Oct. 8, 1980, 80 21502

Int. Cl.³ B66D *1/08, 1/22, 1/44*

U.S. Cl. 254—340 **2 Claims**



1. A hoisting winch comprising:

a drum mounted for rotation in two directions on a drum shaft for winding and unwinding a flexible cable on said drum;

a high-torque, low-speed hoisting motor having a hoisting shaft rotatable by said hoisting motor in two directions for rotating said drum in said winding and said unwinding directions;

a low-torque, high-speed compensation motor having a compensation shaft rotatable by said compensation motor

in two directions for rotating said drum in said winding and said unwinding directions;

an epicycloidal gear train including a ring gear mounted to said drum in driving relation therewith, at least one planet gear on a planet carrier mounted in driving relation to said compensation shaft and a sun gear mounted in driving relation to said hoisting shaft;

first uni-directional free wheel means mounted to said hoisting shaft between said gear train and said hoisting motor and including a first driving element mounted in driving relation to said hoisting shaft and a first driven element for driving by said first driving element only in the direction of rotation corresponding to the unwinding direction of rotation of said drum;

first brake means selectively appliable for resisting rotation of said first driven element by said first driving element;

second uni-directional free wheel means mounted to said compensation shaft between said gear train and said compensation motor and including a second driving element mounted in driving relation to said compensation shaft and a second driven element for driving by said second driving element only in the direction of rotation corresponding to the winding direction of rotation of said drum; and

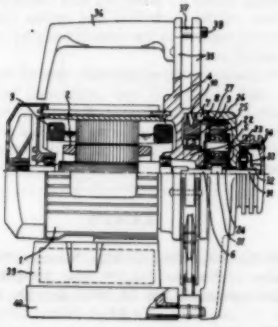
second brake means selectively appliable for resisting rotation of said second driven element by said second driving element.

4,434,973

ELECTRIC HOIST

Andre Desplats, Boulogne Billancourt, France, assignor to Tractel, S.A., France

Filed Oct. 7, 1981, Ser. No. 309,363
Claims priority, application France, Oct. 9, 1980, 80 21593
Int. Cl.³ B66D *1/22, 1/12, 5/14*
U.S. Cl. 254—344 **5 Claims**



1. An electric hoist comprising:

a case within which an electric motor is disposed, said motor presenting an output shaft passing through said case,

a reduction gear providing a high speed reduction ratio with a reduced overall axial length, which comprises:

a sun wheel carried by said motor output shaft,

a planet gears carrying cage disposed within an extension of the case,

planet gears carried on bearings on said cage and meshing with said sun wheel,

a fixed first annulus rigid with the case and coaxial with the motor output shaft, said first annulus presenting internal teeth meshing with said planet gears,

a second annulus coaxial with the motor output shaft, meshing with said planet gears and of which the number of teeth is slightly different from the tooth number of said first annulus,

a wedging groove pulley for actuating a free-end traction or hoisting wire rope, said pulley being disposed in a space provided within the case, between said motor and said reduction gear, and being carried by a reinforced element coaxially with the motor output shaft,

flanges extending upwardly from said case and presenting openings for securing an anchoring pin, and

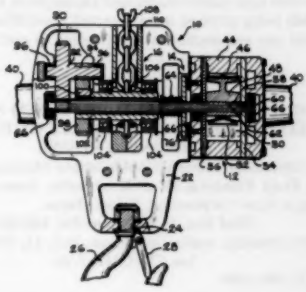
an upper handle rigid with said anchoring pin.

4,434,974

PNEUTMATIC HOIST BRAKE AND CONTROL

Kenneth H. LaCount, Green Bay, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 27, 1981, Ser. No. 325,239
Int. Cl.³ B66D *1/08, 3/20, 5/12, 5/26*
U.S. Cl. 254—360 **11 Claims**



1. A pneumatic hoist comprising, in combination, a vane motor having a pair of inlet ports and and output shaft, a speed reduction mechanism driven by said output shaft of said vane motor, and a chain engaging sprocket operably coupled to said speed reducing mechanism, pneumatic brake means for selectively inhibiting rotation of said vane motor, said pneumatic brake means including a planar brake disk secured for rotation with said output shaft, a friction surface disposed generally parallel and adjacent said disk, means for biasing said brake disk into contact with said friction surface, valve means for controlling a flow of compressed air to said vane motor and said pneumatic brake means, and port plate means for directing compressed air to said vane motor and said brake means and exhaust air from said vane motor, said port plate means having a first pathway providing communication between said valve means and one of said inlet ports, a second pathway providing communication between said valve means and the other of said inlet ports, a pair of check valves providing unidirectional flow from a respective one of said first and said second pathways to a third pathway providing communication between said check valves and a region between said disk and said surface of said pneumatic brake means, whereby activation of said controlling means directs parallel flows of air to said vane motor to cause rotation thereof and to said pneumatic brake means to translate said brake disk away from said surface.

4,434,975

ARMORED CATTLE GUARD

John W. Tompkins, P.O. Box 8186, Phoenix, Ariz. 85066

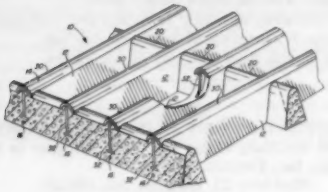
Filed Sep. 30, 1982, Ser. No. 428,938
Int. Cl.³ A01K *3/00*
U.S. Cl. 256—17 **7 Claims**

1. A cattle guard comprising:

(a) a plurality of pre-cast longitudinally extending rails;

(b) a plurality of pre-cast concrete beams at longitudinally spaced-apart locations and extending transversely between said rails thereby forming an integral pre-cast unit of rails and beams;

(c) a metal cap extending longitudinally along the top surface of one or more of said rails; and



(d) anchor means extending from said cap and embedded within said rails to secure said cap in place, said beams and rails being pre-cast in an inverted position in a mold with said cap and anchor in first position in said mold.

4,434,976

CONCENTRIC MULTI-TUBE-SYSTEM NOZZLE SITUATED BENEATH THE SURFACE OF THE MELT IN A REFINING VESSEL

Shozo Murakami; Hiroyuki Aoki; Saburo Matsuo; Eiji Ikezaki, and Kenji Yamaura, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,325
Claims priority, application Japan, Dec. 11, 1981, 56-199615
Int. Cl.³ C21B *7/16*
U.S. Cl. 266—268 **6 Claims**

1. A concentric multi-tube-system nozzle situated beneath the surface of the melt in a refining vessel, comprising:

an inner tube;

an outer tube positioned concentrically with respect to the inner tube and forming an annular clearance between the inner tube and the outer tube;

spacers for circumferentially dividing the annular clearance; and

a section defined by two adjacent spacers, said section comprising a contraction portion which is positioned essentially at the bottom of said section in the flow direction of cooling gas which is introduced into the section.

4,434,977

STRUT TYPE SUSPENSION FOR A VEHICLE

Kazuo Chiba, Tokyo, and Iwao Nakamura, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 140,944, Apr. 16, 1980, abandoned. This application Apr. 12, 1982, Ser. No. 367,712
Claims priority, application Japan, Apr. 18, 1979, 54-48142
Int. Cl.³ F16F *3/08, 9/54*
U.S. Cl. 267—33 **8 Claims**

1. A strut type suspension for a vehicle body, comprising:

a shock absorber having an outer casing;

said shock absorber having a piston rod extending from said outer casing;

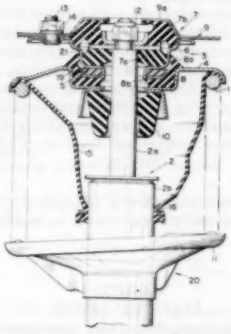
a lower spring seat fixed to said outer casing;

an upper spring seat loosely and movably fitted about the periphery of said piston rod above and facing said lower spring seat;

a coil spring positioned between said upper and lower spring seats and encircling said piston rod;

a bumper rubber fitted on said piston rod between the upper end of said outer casing and the lower side of said upper spring seat;

an upwardly opening cup-shaped first bracket fixed adjacent its outer peripheral portion thereof to the vehicle body, said first bracket positioned between said upper spring seat and said vehicle body, said cup-shaped first bracket having an aperture in its bottom through which said piston rod extends;



a first insulator rubber positioned at least partially within and generally between said cup-shaped first bracket and said vehicle body, an upper end portion of said piston rod including means for attaching said piston rod to said first insulator rubber such that said piston rod is resiliently supported relative to the vehicle body by said first insulator rubber; and

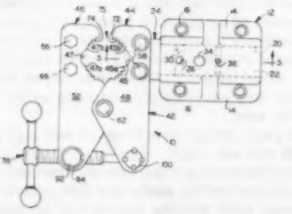
a second insulator rubber generally spaced from and coaxial with said piston rod and positioned between and in contact with the lower side of said first bracket and the upper side of said upper spring seat, said second insulator rubber having a greater rigidity than that of said first insulator rubber.

4,434,978

VISE

Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537

Continuation of Ser. No. 242,379, Mar. 10, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 504,083
Int. Cl.³ B25B *1/04*
U.S. Cl. 269—69 **7 Claims**



1. An apparatus for securely supporting a generally cylindrical workpiece relative to a fixed support comprising:

a base member;

means for securing said base member to the fixed support;

clamps means rotatably mounted on said base member in-

cluding a pair of jaw members pivotally interconnected, each of said jaw members including a pair of spaced apart, generally parallel plates and means for maintaining said plates in a generally parallel spaced apart relationship, each of said plates having a workpiece engaging surface thereon with said engaging surfaces of one of said jaw members in facing relation to said engaging surfaces of the other one of said jaw members, each of said workpiece engaging surfaces having a generally arcuate portion interrupted at an intermediate area by a notched portion extending generally radially outwardly from said arcuate portion;

means for releasably securing said rotatable clamp means relative to said base member to militate against any relative rotative movement therebetween; and

means mounted on said clamp means for effecting pivotal movement of said jaw members relative to one another to move said workpiece engaging surfaces toward and away from one another whereby a workpiece positioned between said surfaces may be securely supported relative to the fixed support.

4,434,979

PRINTED GOODS REMOVAL APPARATUS

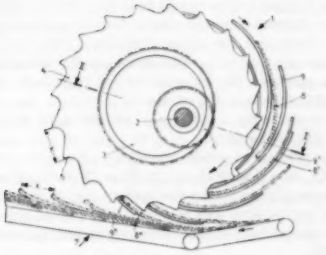
Ingo Köbler, Anhausen, and Hans-Jürgen Mische, Augsburg, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,234

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108681

Int. Cl.³ B65H *29/00*

U.S. Cl. 271—307 **11 Claims**



1. Printed goods removal and staggered, imbricated distribution apparatus having

at least one distribution wheel (1, 1') having circumferentially located distribution vanes or blades (9, 9', 9'', 9a) between which printed goods (8) to be distributed are inserted, and

a rotating shaft (2) to which said at least one distribution wheel (1, 1') is secured, and

comprising, in accordance with the invention,

at least one disc (3) secured in fixed position and located eccentrically with respect to the shaft (2) of the distribution wheel to permit rotation of the shaft, and hence of the distribution wheel with respect to at least one disc;

an abutment wheel (4) rotatable about the fixed disc (3) and having abutment surfaces (6, 6', 6'') on a circumference thereof uniformly spaced from each other by a predetermined distance (x);

means (5) rotating the abutment wheel (4) in the same direction as the distribution wheel (1, 1') and at a speed which is slower than the speed of the distribution wheel; and

removal means (7, 15) operating at a linear speed corresponding to the circumferential speed of the abutments (6) of the abutment wheel (4);

the eccentric position of the disc (3) being adjusted with respect to the distribution wheel such that printed goods (8) introduced in the space between said vanes or blades first engage an abutment (6) of the abutment wheel (4) and then, upon continued rotation of the distribution wheel, as well as continued rotation of the abutment wheel at said slower speed, the abutment wheel will push the printed goods (8'') out from between said space at the predetermined distance (x) from preceding printed goods (8, 8') in a preceding space for imbricated removal on the removal means with said predetermined spacing (x).

4,434,980

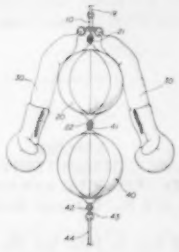
BOXING DEVICE THAT FIGHTS BACK

Bernard J. Babineaux, 139 A. B. Dugas Rd., Lafayette, La. 70503

Filed Feb. 11, 1982, Ser. No. 348,089

Int. Cl.³ A63B *69/34*

U.S. Cl. 272—78 **5 Claims**



1. A boxing device, comprising:

a coupling suspendable from a substantially fixed supporting structure;

a resilient boxing bag having on its surface an upper hook suspended from the coupling and also having a lower hook on its surface opposite the upper hook, the lower hook being attachable to a substantially fixed lower supporting structure; and

a pair of elongated, padded arms, each having a blunt, padded lower end and each arm being connected to the coupling and hanging from the coupling adjacent opposite sides of the boxing bag, so that each arm may move arcuately forward in response to an impact force applied to the boxing bag, each arm thereby thrusting its blunt, padded lower end forward and upward towards a source of the impact force.

4,434,981

CROSS COUNTRY SKIING SIMULATING EXERCISER

Desmond H. Norton, 1122 Patterson St., Ogden, Utah 84403

Filed Nov. 12, 1981, Ser. No. 320,837

Int. Cl.³ A63B *69/18*

U.S. Cl. 272—97 **14 Claims**

1. An exercising apparatus adapted to simulate cross country skiing, comprising:

a base member, the upwardly facing surface thereof being generally planar;

a pair of foot supporting platforms each having rolling means for support thereof upon the upward facing surface of the base member;

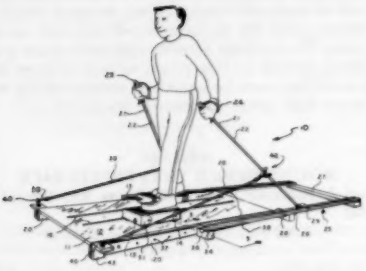
means for guiding each of the foot platforms along generally parallel paths upon said surface;

means for restraining the foot platforms to oppositely directed reciprocatory movements;

a pair of simulated ski pole means;

means for guiding the lowermost end of each pole in reciprocatory motion generally parallel to the motion of the foot platforms; and

means for yieldably resisting motion of each one of the pair of poles directed backwardly with respect to the user of



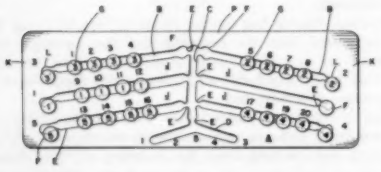
the apparatus, said means being functionally independent of the motions of the foot platforms.

4,434,982

PUZZLE-GAME UTILIZING MOVABLE DISCS TO ATTAIN SPECIFIED ARRANGEMENT

Beryl I. Bearint, 802 No. Delaware St.-No. 406, San Mateo, Calif. 94401

Filed Sep. 13, 1982, Ser. No. 416,913
Int. Cl.³ A63F 9/08
U.S. Cl. 273—153 S **7 Claims**



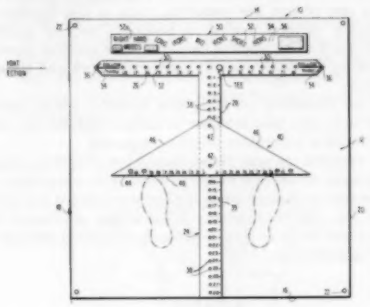
1. A puzzle-game comprising a flat board;
first and second pluralities of parallel slots through said board;
a first end of each of said parallel slots terminating in a closed end in said board;
second ends of said slots terminating in a central common connecting slot positioned across said parallel slots;
a plurality of movable spool-shaped discs having cylindrical ends joined by smaller cylindrical connecting members;
said connecting members being disposed to move in said slots;
said cylindrical ends being larger in diameter than the width of said slots;
one of the cylinders of each of said discs being of one of five different colors and having numbers 1 to 5 imprinted thereon;
said central connecting slot terminating in a Y-shaped slot termed a crib closed at its ends;
said parallel slots having an enlarged section at each end to accommodate said connecting members of said discs and a restricted section adjacent thereto to impede the motion of said discs in said slots;
whereby starting from a predetermined relative position of said discs in said slots a specified arrangement of said discs may be attained in a given number of moves.

4,434,983

GOLFER'S STANCE MAT

Franklin K. Taggart, P.O. Box 246, Hydeville, Vt. 05750

Filed Sep. 30, 1982, Ser. No. 430,311
Int. Cl.³ A63B 69/36
U.S. Cl. 273—187 R **2 Claims**



1. A golf teaching device for driving ranges and the like, said device comprising in combination:
a rectangular base mat having front and rear edges generally at right angles to the flight path of a golf ball to be driven in conjunction therewith;
a tee bar mounted to the upper surface of the base mat and including a base strip defining the swing path for the head of a golf club being swung by a driver standing on said base mat and generally facing the base strip;
said tee bar further including an integral center strip extending at right angles to said base strip and outwardly to one side thereof from the center thereof generally parallel to the front and rear edges of the base mat;
a first scale carried by said base strip for indicating specific tee positions for tee placement on the base strip to the right and left of the center strip;
said center strip including a second scale extending the length of the same;
a feet placement guide adjustably mounted to the center strip at a longitudinal position therealong to effect a proper placement for the golfer's feet to opposite sides of the center strip and bearing a third scale along an edge thereof at right angles to the longitudinal axis of the center strip;
a tee position instruction strip reversibly face mounted to the upper surface of said base mat positioned adjacent to said base strip and to the side opposite the center strip and bearing indicia on each face thereof representing the desired proper tee positions for a set of golf clubs; and
wherein said center strip comprises a series of pin placement holes, said feet placement guide comprises a triangular planar member including a base edge remote from the base strip of the tee bar and bearing indicia to the right and left of a center line through the apex of the triangular planar member along said base edge to identify golfer's foot positions to the right and left of said center strip and behind the base edge on said rectangular base mat, and wherein said triangular planar member is detachably mounted to the tee bar strip by means of aligned pins projecting from the bottom surface for the foot placement guide at the center thereof and receivable within given pin placement holes formed within said center strip;
whereby, a golfer may readily take identical stance positions from time to time by way of said scales and tee placement positions for a given golf club, and wherein the assembly may be utilized both by right handed and left handed golfers by the simple expedient of assuming a position either fore or aft on the mat and face reversal of the instruction strip whose iron and wood tee positions are

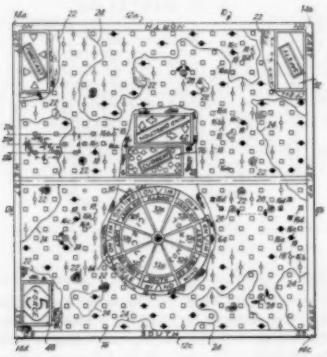
reversed relative to the base strip with respect to the direction of flight of the golf ball.

4,434,984

SAILBOAT RACE BOARD GAME APPARATUS

Carl D. Bergstrom, 506 Bread and Cheese Hollow Rd., Fort Salonga, N.Y. 11768

Filed Feb. 16, 1982, Ser. No. 348,983
Int. Cl.³ A63F 3/00
U.S. Cl. 273—246 **16 Claims**



1. Sailboat race board game apparatus comprising:

a game board having a playing area on a major area of which a plurality of movement spaces are designated, said major area constituting a water area, said movement spaces being arranged in a plurality of rows, the movement spaces in each row being equally spaced from one another by a certain distance, and wheren adjacent rows are spaced from each other by one-half of said certain distance, and wherein the movement spaces of one row are displaced with respect to the movement spaces of an adjacent row by one-half of said certain distance, so that the movement spaces in alternate rows are aligned with each other to form a plurality of columns of said movement spaces, the movement spaces in each column being equally spaced from one another by said certain distance, whereby each row of movement spaces defines an east-west movement direction, each column of movement spaces defines a north-south movemet direction, and said rows and columns of movement spaces together define a plurality of northwest-southeast movement directions and a plurality of northeast-southwest movement directions,

said game board having a movement direction indicator provided thereon, said movement direction indicator defining eight areas for designatng, respectivly, northerly, southerly, easterly, westerly, northwesterly, northeasterly, southwesterly and southeasterly movement directions of a movement piece;

a plurality of movement pieces adapted to be moved over said game board playing area on said movement spaces in said movement directions, each of said movement pieces being provided with distinguishing indicia;

means adapted to cooperate with said movement direction indicator provided on said game board for indicating the direction of movement of each of said plurality of movement pieces; and

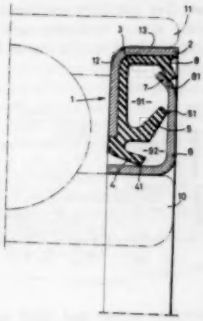
wherein said means for indicating the direction of movement of each of said movement pieces are constituted by a plurality of control markers, each of said control markers being provided with indicia corresonding to said indicia provided on a respective movement piece, said control markers being selectively situatable on any one of said movement direction indicator areas to designate the direction of movement of said corresponding movement pieces on said gameboard playing area.

4,434,985

GASKET WITH METAL MOUNTING ARMATURE ROTATING BETWEEN COAXIAL PARTS

Claude Sonnerat, Annecy-le-Vieux, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed May 13, 1982, Ser. No. 377,838
Claims priority, application France, May 13, 1981, 81 09476
Int. Cl.³ F16J 15/32, 15/34
U.S. Cl. 277—37 **1 Claim**



1. A gasket for sealing between two relatively rotating parts, comprising:

a first ring having an axis and being connected to one of said rotating parts, said first ring having an L-shaped cross section including a first radial leg and a first axial leg;

a second ring coaxial with said first ring and being connected to the other of said rotating parts, said second ring having an L-shaped cross section including a second radial leg extending towards said first axial leg and a second axial leg extending axially towards said first radial leg, said second radial leg having a slanted distal end portion which deviates from the radial direction :oward said first radial leg, said first and second rings enclosing a chamber;

a lining molded to the surface of said first ring which faces said second ring;

a first watertight lip extending from said lining and into contact with a first surface of said second axial leg;

a second watertight lip extending from said lining and into contact with a first surface of said second radial leg;

a third watertight lip extending from said lining and into contact with said slanted end portion at a second opposing surface of said second radial leg, whereby said third lip retains said second ring relative to said first ring and wherein said first, second and third lips, said lining and said rings together define two isolated sub-chambers of said chamber; and

a lubricant filling each of said sub-chambers.

4,434,986

SHAFT SEAL

Dale J. Warner, Palos Heights, Ill., assignor to Gits Brothers Mfg. Co., Bedford Park, Ill.

Filed Oct. 12, 1982, Ser. No. 433,838
Int. Cl.³ F16J 15/34
U.S. Cl. 277—42 **13 Claims**

1. A shaft seal for a rotatable shaft which extends through a wall of a machine, said shaft seal comprising:

a hollow housing for receiving the shaft therethrough and adapted for fluid-sealed connection to the machine wall, including an inner surface and a ledge;

a drive sleeve for connection to and receiving the shaft

therethrough for rotation therewith in a fluid-sealed relationship within said housing;

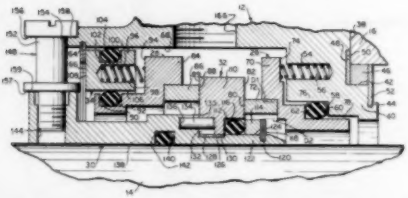
a ring-shaped first seal member about and coupled to said drive sleeve for rotation therewith and comprising first and second radially-extending seal faces on axially opposite sides thereof;

first sealing means for receiving the shaft therethrough, said first sealing means being fluid sealed to, axially movable within and fixed against rotation with respect to said housing,

said first sealing means comprising a second seal member including a radially-extending third seal face;

first bias means in said housing ledge urging said first sealing means axially towards said ring-shaped seal member to engage said first and third seal faces;

second sealing means receiving said drive sleeve therethrough, said second sealing means being fluid sealed to,



axially movable within and fixed against rotation with respect to said housing, said second sealing means comprising a third seal member including a radially extending fourth seal face; and

second bias means connected to said housing and fluid sealed to said housing and to said second seal means, said second bias means urging said second seal means axially towards said ring-shaped first seal member to engage said second and fourth seal faces,

said first sealing means comprising a first radially-extending surface, a second radially-extending surface, and an annular surface and an O-ring bearing against said second radially-extending surface and said annular surface, and

said housing ledge comprising an annular surface bearing against said O-ring and a radially-extending surface bearing against said O-ring and sealing said first sealing means to said housing.

4,434,987

SHAFT SEAL WITH MAGNETICALLY CONTROLLED GAP BETWEEN ROTATING RING AND SURROUNDING NON-ROTATING RING

Rolf Albers, Oberhausen; Emil Aschenbruck, Duisburg; Günter Neuhaus, and Joachim Kotzur, both of Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,349

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223744

Int. Cl.³ F16J *15/54*

U.S. Cl. 277—80 **7 Claims**

1. A seal device for a shaft rotating with respect to a housing, comprising:

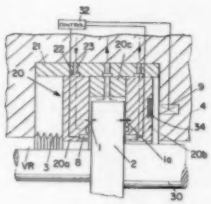
a rotating seal ring having opposite radially extending side surfaces and a circumferentially extending end surface, said rotating seal ring connected to the shaft for co-rotation therewith;

a non-rotating seal ring non-rotatably associated with the housing, surrounding at least a portion of said rotating seal ring and defining a pair of radial plane sealing gaps with said side surfaces of said rotating seal ring and a circumferential gap with said end surface of said rotating seal ring,

said non-rotating seal ring having a radially extending portion with magnetically attractable material connected thereto;

a packing element which is elastically yieldable in all directions, connected between said housing and said non-rotating seal ring for permitting relative motion therebetween to vary a width of each gap;

sealing fluid means for supplying a sealing fluid to the gaps, said sealing fluid means supplying sealing fluid over at least one supply bore communicating with each radial plane gap;



an electromagnet connected to the housing on a side of said radially extending portion and adjacent said magnetically attractable material for exerting a magnetic force on said non-rotating seal ring through said magnetically attractable material;

a sensor connected to said non-rotating seal ring for sensing a width of each radial plane gap; and

control means connected to each sensor and said electromagnet for activating said electromagnet in response to each sensor for applying a selected magnetic force to maintain a selected width for each radial plane gap.

4,434,988

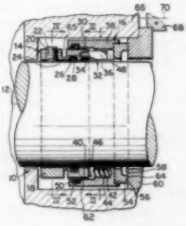
SHAFT SEAL

Dale J. Warner, Palos Heights, Ill., assignor to Gits Brothers Mfg. Co., Bedford Park, Ill.

Filed Oct. 28, 1982, Ser. No. 437,294

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—81 R **11 Claims**



1. In a shaft seal for a rotatable shaft which extends through the end wall of a machine, of the type in which a drive sleeve assembly is fixed to the shaft for rotation therewith and fluid sealed to the shaft, in which a ring seal assembly rotates against a fixed seal ring and is urged thereagainst in a fluid sealed manner via spring means between the drive sleeve assembly and the ring seal assembly and by internal fluid pressure and is thereby fluid sealed to the drive sleeve assembly, and in which a drive coupling is provided between the drive sleeve assembly and the ring seal assembly, the improvement comprising:

at least one drive lug fixed to the drive sleeve assembly and extending parallel to the axis of rotation of the shaft; and

at least one recess in the ring seal assembly receiving said at least one drive lug for axial movement therein.

4,434,989

SEALING GASKET

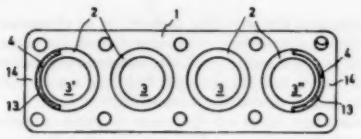
Horst Beyer; Klaus Lönne, both of Burscheid, and Klaus-Peter Majewski, Odenthal-Erberich, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,514

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101921

Int. Cl.³ F16J *15/06*

U.S. Cl. 277—235 B **9 Claims**



1. In a flat sealing gasket having sealing faces on reverse sides thereof; an opening defined in the sealing gasket; a cross-sectionally generally U-shaped armor framing the opening; said armor having legs straddling marginal edge zones of said gasket defining said opening; each armor leg having an inner face in engagement with the gasket and an outer face oriented away from said gasket; the improvement comprising a low-friction coating provided on the outer face of at least one of said armor legs; and wherein said sealing faces externally of said armor are substantially free from said low-friction coating.

4,434,990

FLUID-ACTUATED HOLLOW POWER CHUCK

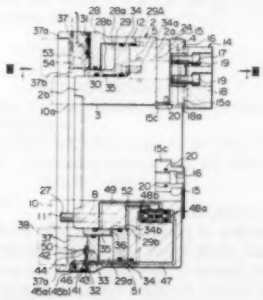
Takeo Kobayashi, Nagoya, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 17, 1981, Ser. No. 322,251

Claims priority, application Japan, Nov. 26, 1980, 55-166131

Int. Cl.³ B23B *31/30, 5/34*

U.S. Cl. 279—4 **6 Claims**



1. A fluid actuated type hollow power chuck comprising:

a chuck body having a central through bore therethrough of uniform diameter and adapted to be mounted on a hollow spindle of a machine tool, said chuck body having a large outer diameter front part facing away from the spindle and a small outer diameter rear part facing toward the hollow spindle, and having means extending through said front and rear parts for mounting the chuck body directly on the spindle;

chuck jaws mounted on a radial face of the large outer diameter front part of said chuck body for radial movement thereon;

a generally hollow cylinder body having a forward part secured to said large outer diameter front part of said chuck body and a rearward part spaced radially from said small outer diameter rear part of said chuck body, said chuck body and said cylinder body defining an annular cylinder chamber therebetween around the outer surface of said rear part of said chuck body;

an annular piston in said annular cylinder chamber and having an axial piston sleeve integral with and extending from the rear thereof and slidably and sealingly fitted between the rearward part of said chuck body and said cylinder body and projecting rearwardly of said cylinder body;

power transmitting means operatively connecting said piston to said jaws for operating said jaws in response to axial movement of said piston; and

detection means provided at a position rearward of said cylinder body for detecting axial displacement of the end of said piston sleeve which is outside of said cylinder body which is indirectly indicative of radial displacement of said jaws.

4,434,991

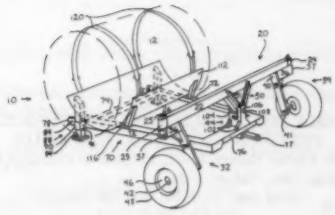
TANK CARRIER

Dean A. Winterton, R.R. 1, Paw Paw, Ill. 61353

Filed Aug. 23, 1982, Ser. No. 410,306

Int. Cl.³ B60P *3/22*

U.S. Cl. 280—5 R **22 Claims**



1. A tank carrier including a wheel frame and a tank frame, said tank frame being pivotally secured to said wheel frame, a tank for holding liquid agricultural material secured to said tank frame, wherein:

(a) a first castor wheel and a second castor wheel are secured to said wheel frame;

(b) said first castor wheel and said second castor wheel are oppositely disposed;

(c) a pivot means for pivotally connecting said wheel frame to said tank frame is situated between said first castor wheel and said second castor wheel;

(d) said tank frame has a pivot side connected to said wheel frame below said wheel frame;

(e) said tank frame has a tractor side oppositely disposed from said pivot side; and

(f) said tractor side includes means for connecting said tank carrier to a vehicle capable of pulling said tank carrier.

4,434,992

TROLLEY FOR USE IN TRANSPORTING A BOAT

Anthony W. Beach-Thomas, Ross-on-Wye, England, assignor to John Rhys Hughes, Surrey, England

Filed Apr. 21, 1981, Ser. No. 256,231

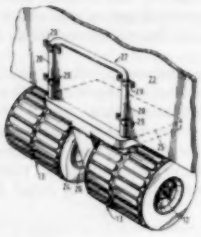
Claims priority, application United Kingdom, Nov. 28, 1980, 8038228

Int. Cl.³ B62B *1/26*

U.S. Cl. 280—47.13 B **3 Claims**

1. A trolley for use in transporting a boat, comprising a body element formed from a unitary block of resilient material shaped to engage a part of the boat at the bottom thereof, a

metal retaining element projecting from the block of resilient material and adapted for releasable engagement with said part of the boat, so as to secure the trolley to the boat, a spindle extending through the block of resilient material so as to project from opposite sides thereof, and a pair of wheels rotatably mounted on the spindle on opposite sides of the block of resilient material, the block being T-shaped and having a horizontal cross piece that overlies said wheels and a vertical stem through which said spindle extends, said metal retaining element being of inverted U-shape having two upright legs whose upper ends are interconnected and whose lower ends are embedded in opposite ends of said horizontal cross piece said U-shaped element being disposed in a plane parallel to the axes of said wheels.

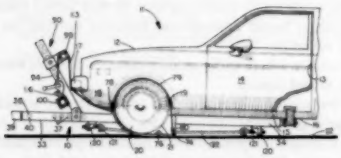


4,434,993

ASSEMBLY FOR ATTACHMENT TO A VEHICLE FOR PERFORMING A WORK OPERATION

Stanley F. Curtis, Exeter, Calif., assignor to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Jan. 27, 1982, Ser. No. 343,170
Int. Cl.³ B60P *3/12*
U.S. Cl. 280—402 **4 Claims**



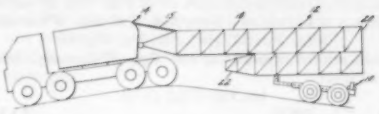
1. An assembly for adjusting the relationship of first and second portions of a vehicle relative to each other for transport, the first portion of the vehicle including a pair of ground engaging wheels, the assembly comprising a main frame; means mounted on the main frame for attachment to the first portion of the vehicle at a first point of reference, said attachment means including a pair of receptacles and members borne by the main frame individually to receive the wheels of said pair of wheels of the vehicle and being adjustable toward and from each other laterally of the frame in opposite directions to match the distance between said wheels, each member engageable with its respective wheel when received in the receptacle to capture said wheel therein; a subframe borne by the main frame extending to a second point of reference spaced from said first point of reference; and means mounted on the frame and extending to the second point of reference for engaging the second portion of the vehicle between said points of reference to adjust the first and second portions of the vehicle relative to each other.

4,434,994

BOOM AXLE

Julien H. Pepin, 460 Matthew St., Bristol, Conn. 06010

Filed Apr. 28, 1982, Ser. No. 372,619
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—404 **11 Claims**



1. Apparatus for providing support for an elongated crane boom during over-terrain movement thereof, the boom being attached at a first end to a vehicle, said apparatus comprising:

frame means, said frame means including a main body portion and an extendable forward portion;

at least a first wheel set, said wheel set being mounted from said frame means main body portion and including an axle, said first wheel set further including means resiliently coupling said axle to said frame means;

means affixed to said frame mean forward portion and defining a pivot axis which is parallel to and displaced from said wheel set axle; and

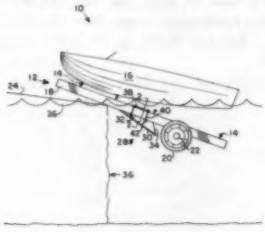
means for detachably and rotatably coupling the boom to said pivot axis defining means intermediate the length of said boom whereby relative motion between a portion of said boom and said axle may occur.

4,434,995

RETRIEVABLE BOAT TRAILER

Stanley A. Toy, 49 Cypress Dr., Palm Harbor, Fla. 33563

Filed Jul. 22, 1982, Ser. No. 400,897
Int. Cl.³ B60P *3/10*
U.S. Cl. 280—414.1 **6 Claims**



1. A boat trailer, comprising,

a frame portion of generally rectangular configuration,

said frame portion having wheel members rotatably mounted thereto for transporting said frame portion,

said frame portion having a hitch means provided as a part thereof so that said frame portion can be towed by a motor driven vehicle,

a ramp means secured to said frame portion just forwardly of said wheel members,

said ramp means having a leading edge,

said leading edge forming a feather edge with said frame portion so that an obstacle will slide from said frame portion onto said ramp means unobstructed by said feather edge when said boat trailer is retrieved from a position where its wheel members have fallen from a precipice,

said frame portion further comprising a pair of longitudinally aligned, transversely interconnected side rail members disposed in parallellism with one another,

and wherein said ramp means are mounted in depending

relation to said side rail members, in transverse alignment to one another.

4,434,996

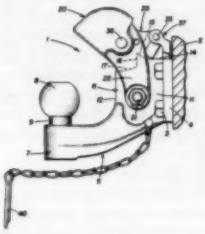
TOWING HITCH CONSTRUCTION

Dean L. Wallace, 2899 Chaucer Dr., NE., North Canton, Stark County, Ohio 44721

Filed Apr. 23, 1982, Ser. No. 371,240

Int. Cl.³ B60D *1/04, 1/06*

U.S. Cl. 280—504 **8 Claims**



1. A hitch construction including:

(a) a body having a mounting end an an outwardly projecting hook;

(b) a ball mounted on an extended end of the hook and projecting upwardly therefrom;

(c) a closure latch pivotally mounted on the mounting end of the body spaced from the ball; and

(d) lock means movably mounted on the closure latch and engageable with the mounting end of the body for locking the latch in a first closed position spaced above the ball a distance sufficient to engage a hood of a hooded-type coupler when mounted on the ball to prevent disengagement of the hood from the ball, and alternately for locking the latch in a second closed position against the ball to prevent disengagement of a lunette coupler from the ball, said lock means including first and second locking pawls alternately engageable with a projection formed on the body to lock the closure latch in the first and second closed positions, respectively.

4,434,997

SKI BINDING JAW

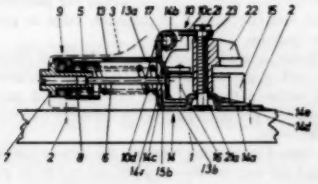
Theodor Nitschke, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Jul. 13, 1981, Ser. No. 282,766

Claims priority, application Austria, Jul. 24, 1980, 3822/80

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—625 **8 Claims**



1. In a safety ski binding jaw which can releasably secure a ski boot on a ski and includes: a support member; two centering levers which are respectively supported on said support member for pivotal movement about generally vertical first and second axes, said first and second axes being spaced from each other and each said centering lever having a first leg and a second leg, said first legs each being arranged to engage the sole of said ski boot and said second legs projecting inwardly toward each other; resilient means cooperable with said second legs of said centering levers for yieldably urging pivotal movement of each said centering lever in a first direction in which said first leg thereon moves toward said ski boot; and a sole hold-down supported on a generally vertical bolt; the improvement comprising: means supporting said bolt for substantially vertical movement with respect to said support member; stop means for limiting upward movement of said bolt relative to said support member; and a compensating lever which is supported on said support member for pivotal movement about a generally horizontal axis and is operatively coupled to said bolt; said compensating lever being respectively pivoted in second and third directions in response to upward and downward movement of said bolt and being operatively coupled to said second leg of each said centering lever; upward movement of said sole hold-down and said bolt pivoting said compensating lever in said second direction and said compensating lever thereby pivoting said centering levers in a fourth direction opposite said first direction against the urging of said resilient means so that said first legs of said centering levers move away from said ski boot; wherein said stop means includes said support member having a support plate with an opening therethrough, said bolt extending through said opening; and wherein said stop means includes a disk which is supported on said bolt below said support plate and has a diameter which is larger than said opening which is provided in said support plate.

4,434,998

REAR AXLE FOR VEHICLES ESPECIALLY MOTOR VEHICLES

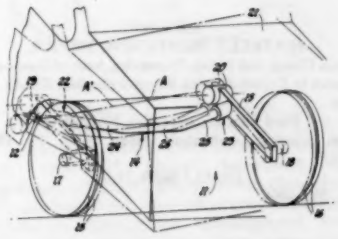
Helmut Kaltwasser, Eltville, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1981, Ser. No. 253,030

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016248

Int. Cl.³ B60G *11/20*

U.S. Cl. 280—721 **4 Claims**

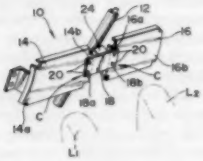


1. Rear wheel suspension for automotive vehicles of the type including a pair of longitudinal control arms pivoted at their foward ends on the vehicle body and rotatably mounting adjacent their rearward ends the respective vehicle wheels, and a transverse member adapted for connection at each end thereof to a respective control arm intermediate the ends of the latter in a substantially rigid fashion in the vehicle end view whereby such member controls wheel camber, the improvement which comprises constructing said transverse member with straight end portions and a midportion offset longitudinally of the vehicle body from the transverse plane through the points of connection between said member and the control arms, the axis of each end portion of said member being oriented at said points of connection with the respective control arm at an oblique angle, and means connecting each end of said member with a respective control arm for relative rotation on said axes.

4,434,999
LEG PROTECTOR OF AUTOMOTIVE VEHICLE

Yoshimi Sato, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1981, Ser. No. 301,121
Claims priority, application Japan, Sep. 12, 1980, 55-129986[U]; Sep. 19, 1980, 55-133502[U]
Int. Cl.³ B60R 21/02
U.S. Cl. 280—752 23 Claims



23. A driver and passenger leg protector for use in an automotive vehicle having a steering column, comprising:

(a) first and second side plate members securely connected to a vehicle body and located between a steering column and legs of a driver, said first and second side plate members being in lateral alignment with and spaced apart from each other;

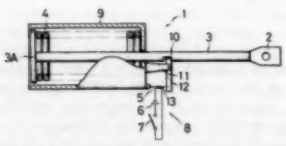
(b) a central plate member located facing the steering column and disposed contacting said first ans second side plate members, said central plate member having lateral side edges engaging corresponding inner edges of the first and second plates, said central plate being a rigid member; and

(c) means for fastening the side edges of said central plate member to the inner edges of each said first and second side plate member.

4,435,000
SEATBELT TIGHTENING DEVICE

Masakazu Chiba, and Fumio Matsuoka, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 24, 1982, Ser. No. 391,714
Claims priority, application Japan, Aug. 31, 1981, 56-129422[U]
Int. Cl.³ B60R 21/10
U.S. Cl. 280—806 6 Claims

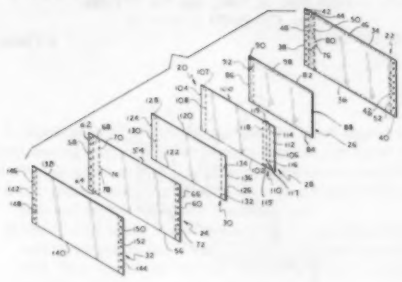


1. A seatbelt tightening device for tightening a seatbelt and removing a sag therefrom in a collision of a motor vehicle, characterized by a rod connected thereto with one end of a seatbelt, a spring for biasing said rod in a direction of tightening said seatbelt, a locking wire for drawing and restraining said rod or spring to a stand-by position against the biasing force of said spring, and means including an electric power source and a collision sensor, for heating and fusion-cutting said locking wire by a current passage from said power source when said collision sensor is turned "ON".

4,435,001
ENVELOPE ASSEMBLY

Larry E. Mills, Lynchburg, and Thomas D. Dove, Cincinnati, both of Ohio, assignors to American Standard Inc., New York, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,378
Int. Cl.³ B41L 1/00, 1/04; B42B 5/00
U.S. Cl. 282—11.5 A 7 Claims



1. An envelope assembly comprising:

an outside envelope including a rear ply and a front ply and each ply having a body portion and detachable inner and outer marginal edge portions;

the inner edge portion including a first part and a second part, the second part being between the first and the body portion of the outside envelope;

said rear and front plies of said outside envelope being interconnected along a line adjacent substantially the entire peripheral edge thereof;

a first line of weakening between the first part and . the second part of the inner marginal edge portion of each ply of the outside envelope;

a second line of weakening between the second part and the body portion of the inner peripheral edge portion of each ply of the outside envelope;

a third line of weakening between the outer marginal edge portion and the body portion of each ply of the outer envelope;

a section of the line interconnection being located on the second part of the inner marginal edge portion so that detachment of the second part will open one end of the outside envelope to permit access to the interior thereof;

a return envelope smaller than the outside envelope enabling it to be positioned in the outside envelope and including a back ply and a forward ply each having a body portion and said forward ply having detachable inner and outer marginal edge portion and said back ply having an inner marginal edge portion;

said back and forward plies of said return envelope being interconnected along a line adjacent the peripheral edge thereof and interrupted at the outer edge to provide an access opening;

the outer marginal edge portion of the forward ply including a first part, a second part and a third part, the second part being between the first part and the third part of the forward ply, the third part being between the second part and the body;

a fourth line of weakening between the inner edge portion of the back ply and the forward ply and the body portion of the back and forward plies;

a fifth line of weakening between the first and second parts of the outer marginal edge of the forward ply of the return envelope;

a sixth line of weakening between the second part of the outer marginal edge portion of the forward ply and the third portion of the forward ply;

a seventh line of weakening between the third part of the

outer marginal edge portion of the forward ply and the body portion of the forward ply;

the outer marginal edge portion of the forward ply being held to the outside envelope at the line of interconnection between the rear and front plies of the outside envelope adjacent the outer edge of the outside envelope;

the third part of the outer marginal edge portion of the forward ply adapted to be bent around the seventh line of weakening into overlying position with respect to the back ply and attachment means for fastening the folded third part to the back ply;

an information ply smaller than the outside envelope and having a body portion and an inner marginal edge portion connected to the return envelope at the line of interconnection between the inner marginal edge portion of the rear ply and the inner marginal edge portion of the front ply of the outside envelope;

the information ply having an outer marginal edge portion connected to the return envelope at a line of interconnection on the outer marginal edge portion of the forward ply;

the interconnected outside envelope, return envelope and information ply being maintained in registration during formation including placing of indicia thereon;

an eighth line of weakening between the inner marginal edge portion and the body portion of the information ply;

a ninth line of weakening between the outer marginal edge portion and the body portion of the information ply;

the fifth line of weakening weaker than the sixth, seventh and ninth lines of weakening; and

detachment of inner marginal edge portions of the rear and front plies of the outside envelope, the inner marginal edge portions of the back and forward plies of the return envelope, and the inner marginal edge portion of the information ply along the second, fourth and eighth lines of weakening provides access to the interior of the outside envelope through the inner end thereof permitting the return envelope and attached information ply to be withdrawn through the open inner end of the outside envelope by detachment along the fifth line of weakening, and separation of the information ply from the return envelope is accomplished by removing the outer marginal edge portion of the information ply and the second part of the outer marginal edge portion of the forward ply of the return envelope along the sixth and ninth lines of weakening which also enables the third part of the outer marginal edge portion to be bent about the seventh line of weakening to close the return envelope.

4,435,002

OXIME ETHERS OF 4,4'-BIS(N,N-DIETHYLAMINO)BENZHYDROL AND PRESSURE-SENSITIVE RECORDING SYSTEMS CONTAINING THEM

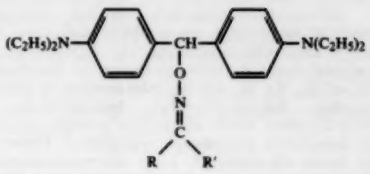
Frank F. Cesark, and Daniel W. Thomas, both of Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 297,802, Aug. 31, 1982, Pat. No. 4,351,956. This application Jun. 9, 1982, Ser. No. 386,561

Int. Cl.³ B41M *5/22*

U.S. Cl. 282—27.5 **5 Claims**

1. In a pressure-sensitive transfer copy set comprising a transfer sheet superimposed on an absorbent sheet, the transfer sheet having a coating on one surface thereof in contact with absorbent sheet, said coating comprising a color reactant compound represented by the formula:



wherein R and R' are alkyl groups of 1 to 4 carbon atoms which forms a colored marking when brought into contact with an electron acceptor, and a material normally insulating said color reactant compound in said coating to prevent contact with said absorbent sheet but being rupturable upon the application of localized pressure on said transfer sheet whereby said color reactant material is released and contacts said absorbent sheet; said absorbent sheet having a coating on one surface thereof in contact with said transfer sheet, said coating containing an said electron acceptor.

4,435,003

CHROMOGENIC QUINAZOLINES

Ian J. Fletcher, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

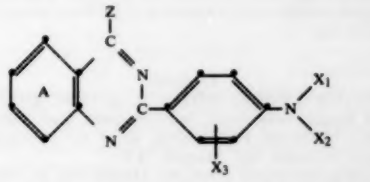
Division of Ser. No. 227,294, Jan. 22, 1981. This application Sep. 22, 1982, Ser. No. 421,205

Claims priority, application Switzerland, Jan. 31, 1980, 780/80; Jul. 15, 1980, 5411/80

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **6 Claims**

1. A pressure-sensitive or heat-sensitive recording sheet material which contains in its color reactive system, as color former, a quinazoline of the formula



wherein Z is hydrogen, R_1, $-OR_1'$, $-SR_1'$ or $-NR_2R_3$; R_1' but not R_1 is halo-C_2–C_6-alkyl or each of R_1' and R_1 is C_1–C_{12}-alkyl, cyano-C_1–C_{12}-alkyl, lower alkoxy-C_1–C_{12}-alkyl, cyclopentyl, cyclohexyl, phenyl, halophenyl, nitrophenyl, cyanophenyl, lower alkylphenyl, lower alkoxyphenyl, lower alkoxycarbonylphenyl, lower alkylcarbonyllphenyl, diphenyl, halodiphenyl, nitrodiphenyl, cyanodiphenyl, lower alkyldiphenyl, lower alkoxydiphenyl, lower alkoxycarbonyldiphenyl, lower alkylcarbonyldiphenyl, naphthyl, halonaphthyl, nitronaphthyl, cyanonaphthyl, lower alkylnaphthyl, lower alkoxynaphthyl, lower alkoxycarbonylnaphthyl, lower alkylcarbonylnaphthyl, benzyl, halobenzyl, nitrobenzyl, cyanobenzyl, lower alkylbenzyl, lower alkoxybenzyl, lower alkoxycarbonylbenzyl, lower alkylcarbonylbenzyl, phenylethyl, halophenylethyl, nitrophenylethyl, cyanophenylethyl, lower alkylphenylethyl, loweer alkoxyphenylethyl, lower alkoxy carbonylphenylethyl, lower alkylcarbonylphenylethyl, thienyl, halothienyl, cyanothienyl, nitrothienyl, lower alkylthienyl, lower alkoxythienyl, lower alkoxycarbonylthienyl, furyl, halofuryl, cyanofuryl, nitrofuryl, lower alkylfuryl, lower alkoxyfuryl, lower alkoxycarbonylfuryl, pyrrolyl, halopyrrolyl, cyanopyrrolyl, nitropyrrolyl, lower alkylpyrrolyl, lower alkoxypyrrolyl, lower alkoxycarbonylpyrrolyl, pyrazolyl, halopyrazolyl, cyanopyrazolyl, nitropyrazolyl, lower alkylpyrazolyl, lower alkoxypyrazolyl, lower alkoxycarbionyl-

pyrazolyl, imidazolyl, haloimidazolyl, cyanoimidazolyl, nitroimidazolyl, lower alkylimidazolyl, lower alkoxyimidazolyl, lower alkoxycarbonylimidazolyl, pyridyl, halopyridyl, cyanopyridyl, nitropyridyl, lower alkylpyridyl, lower alkoxypyridyl or lower alkoxycarbonylpyridyl; R_2 is formyl, lower alkylcarbonyl, lower alkylsulfonyl, benzoyl or phenylsulfonyl or each of R_2, R_3, X_1 and X_2 independently is hydrogen, C_1–C_{12}-alkyl, halo-C_1–C_{12}-alkyl, hydroxy-C_1–C_{12}-alkyl, cyano-C_1–C_{12}-alkyl, lower alkoxy-C_1–C_{12}-alkyl, cyclohexyl, phenyl, halophenyl, nitrophenyl, cyanophenyl, lower alkylphenyl, lower alkoxyphenyl, lower alkoxycarbonylphenyl, benzyl, halobenzyl, nitrobenzyl, cyanobenzyl, lower alkylbenzyl, lower alkoxybenzyl, lower alkoxycarbonylbenzyl, or $-NR_2R_3$ and $-NX_1X_2$ independently is pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino; X_3 is hydrogen, halogen, nitro, lower alkyl or lower alkoxy; and ring A is unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

4,435,004

RECORD MATERIAL CARRYING A COLOR DEVELOPER COMPOSITION

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Division of Ser. No. 272,719, Jun. 11, 1981, Pat. No. 4,391,850. This application Apr. 1, 1983, Ser. No. 481,472

Claims priority, application United Kingdom, Jun. 13, 1980, 8019369

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **4 Claims**

1. Record material carrying a colour developer composition comprising a particulate amorphous hydrated silica/hydrated alumina composite in which the hydrated silica and hydrated alumina are chemically bound in which hydrated silica predominates, and in which the mean alumina content of the composite on a dried weight basis is at least 7.5%, based on the total dry weight of silica and alumina wherein the hydrated alumina is proportionately greater in the surface region of the composite and wherein the surface area of the composite is less than 300 m^2g^{-1}.

4,435,005

JOINT FOR CONDUIT WITH SINGLE THREADED END

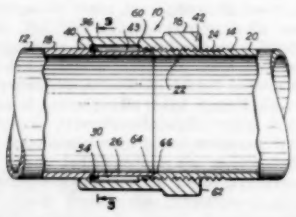
Sidney Berger, Great Neck; Salvatore Buda, East Hills, and Burton Weintraub, Old Bethpage, all of N.Y., assignors to Berger Industries, Inc., Maspeth, N.Y.

Continuation-in-part of Ser. No. 612,030, Sep. 10, 1975, abandoned, and Ser. No. 559,019, Mar. 17, 1975, Pat. No. 3,984,130. This application May 28, 1980, Ser. No. 153,893

The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.

Int. Cl.³ F16L *17/02*

U.S. Cl. 285—31 **16 Claims**



1. In combination, first and second two-ended metal conduit sections of 10 foot or 20 foot lengths and of weights and diameters ranging from 23.0 lbs. per section to 533.5 lbs. per section and from 2" to 8", and adapted to be connected end-to-end to each other in the field:

(a) said first conduit section having a circular cylindrical outer wall surface and an axial passage of constant cross-sectional dimensions and configuration, one end of said first conduit section having external thread means thereon and a flat substantially perpendicular end face and said other end of said first conduit section being non-threaded and having a flat substantially perpendicular end face;

(b) said second conduit section being identical to said first conduit section and having a circular cylindrical outer wall surface equal in diameter to said outer wall surface of said first conduit section and an axial passage of constant cross-sectional dimensions and configurations equal to said axial passage through said first conduit section, one end of said second conduit section having external thread means thereon with a flat substantially perpendicular end face matching and abutting said adjacent flat substantially perpendicular end face of said other non-threaded end of said first conduit section and said other end of said second conduit section being non-threaded and having a flat substantially perpendicular end face;

(c) a metal coupling sleeve having an end face, said coupling sleeve including female thread means extending from adjacent said end face and constructed and dimensioned to engage said external thread means on said one end of said conduit section;

(d) each of said conduit sections including in one piece therewith a length of reduced outside diameter extending axially inwardly from said flat substantially perpendicular end face at said other end of said conduit section to form a stop shoulder in said outer wall surface at said non-threaded end said shoulder being substantially perpendicular to the length of the conduit section;

(e) each of said conduit sections having means providing an annular lock ring groove in said outer wall surface near and spaced axially inwardly from said stop shoulder;

(f) resilient constrictable lock ring means of spring metal partly in said annular lock ring groove and projecting partially out of said groove; and

(g) abutment means extending radially inwardly on said metal coupling sleeve to define a periphery spaced from the outer diameter of the associated conduit section by a slight clearance adapted to cooperate with said stop shoulder and said projecting part of said lock ring means to permit free rotation of said coupling sleeve on said first conduit section and limited axially inward and axially outward movement of said coupling sleeve along said non-threaded end of said first conduit section so that said coupling sleeve can be threaded onto said externally threaded end of said second conduit section so as to force said end faces of said first and second conduit sections together without rotation of either section and may be backed off said externally threaded end of said second conduit section after said first and second conduit sections are assembled whereby said end face of said coupling sleeve is at least flush with said flat substantially perpendicular end face of said first conduit section to permit said first conduit section to be laterally displaced from said second conduit section without longitudinal movement of either conduit section, said abutment means and said lock ring means being constructed to prevent said lock ring means from being forced inwardly entirely into said annular lock ring groove when said end faces of said first and second conduit sections are forced together;

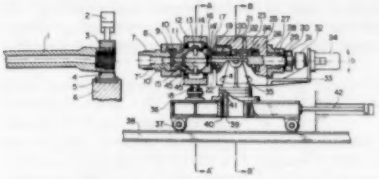
(h) the clearance between said periphery defined by said abutment means and the outer diameter of the associated conduit section, being in the order of 0.020" to 0.040" on the diameter sufficient to prevent sections connected by the metal coupling sleeve to be slightly out of axial alignment up to about ½° without interfering with the engagement between the female thread means and the coupling sleeve of the internal thread means engageable thereby with one end of a conduit section.

4,435,006

AUTOMATIC PRESSURIZED CONNECTING DEVICE

Katsumi Ishigaki; Kazuo Sasaki, and Takumi Fukumura, all of Osaka, Japan, assignors to Kabushiki Kaisha Yamamoto Suiatsu Kogyosho, Osaka, Japan

Filed May 1, 1981, Ser. No. 259,779
Claims priority, application Japan, May 12, 1980, 55-65268[U]; May 27, 1980, 55-71224
Int. Cl.³ F16L 55/00
U.S. Cl. 285—119 4 Claims



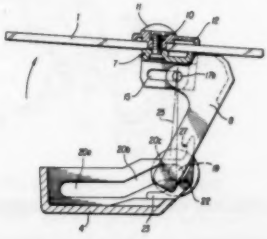
1. An automatic pressurized connecting device comprising:
a main frame with wheels adapted to run on rails;
a rotary shaft fitted in said main frame;
a first bracket mounted on said rotary shaft;
a body rockably coupled to said first bracket for balancing weights of front and rear parts of said bracket;
a main shaft inserted into a central portion of said body;
a high pressure water supplying rotary universal joint coupled to a front end portion of said main shaft;
a seal plug adapted to be screwed into a test pipe coupled to a front end portion of said high pressure water supplying rotary universal joint;
a motor mounted on a second bracket secured to said body, said motor being coupled through a coupling to a rear end portion of said main shaft;
said body having a high pressure water supplying port communicating with a water supplying port formed in a front portion of said main shaft;
a third bracket and at least a pair of fourth brackets mounted on said main frame, said third bracket being secured to a support holding said rotary universal joint; and
supporting cylinders secured to said fourth brackets and to said support.

4,435,007

LOCKING DEVICE FOR PIVOTING WINDOW

Jacques Bascou, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 16, 1981, Ser. No. 254,735
Claims priority, application France, May 8, 1980, 80 10260
Int. Cl.³ E05C 17/12
U.S. Cl. 292—268 8 Claims



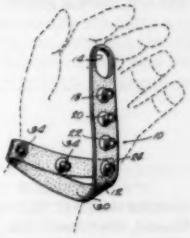
1. A device for locking a pivoting window of a motor vehicle in closed or ajar positions, comprising:
a strap fixed to said window; P1 a static body connected to said motor vehicle;
an embeddable link; and
means for slidably and pivotably interconnecting said link to said strap and said static body, wherein the static body includes a curvilinear ramp portion and a locking groove portion formed therein and wherein the link further comprises a cross rib engageable with said curvilinear ramp and said locking groove.

4,435,008

POLICE GRIPPER

William R. Black, Rte. 2, Halderson Rd., Bangor, Wis. 54614

Filed May 28, 1982, Ser. No. 383,000
Int. Cl.³ A47G 35/00
U.S. Cl. 294—25 2 Claims



1. A device for improving the grip of a law enforcement officer to facilitate the handling of captives comprising a flexible strap which conforms to the hand of the officer, said strap having a loop at one end thereof to be received by the finger of the officer to anchor one end of said strap and a gripping portion containing a plurality of spaced gripping elements and a wrist band portion adapted to be trained around the wrist of the officer, and means for coupling the wrist band portion to said grip portion when said portions intersect over the palm of said user to secure the device in the officer's hand with the grip portion juxtaposed over the palm of the officer's hand, and the gripping elements projecting outwardly from the palm and with the gripping elements exposed for engagement and wherein said gripping elements comprise snap fasteners having protruding male members on one side of said strap and exposed female members on the opposite side of said strap, with said male members forming the gripping elements and the female counterparts of said male members joinable at said intersection with the protruding male members on said wrist band portion when said wrist portion and said grip portion are in intersecting and in overlapping relation on the palm of the user to form a strap loop around the wrist of the user to hold the strap in place.

4,435,009

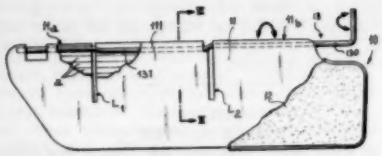
SUN VISORS OF THE TYPE HAVING A CELL STRUCTURE PARTICULARLY FOR AUTOMOBILE VEHICLES

Giovanni Foggini, Turin, Italy, assignor to Lear S.n.c. di Foggini & C., Orbassano, Italy

Filed Jan. 11, 1982, Ser. No. 338,816
Claims priority, application Italy, Jan. 27, 1981, 67098 A/81
Int. Cl.³ B60J 3/00
U.S. Cl. 296—97 H 6 Claims

1. A sun visor of the type having a plate-like member made at least in part of a channel-like cell structure, particularly for motor vehicles, comprising a suspension and pivot rod for the plate-like member and driven into one of the channel-like cells of said structure, characterized in that said plate-like member has a load bearing portion and a movable portion resiliently yieldable with respect to said load bearing portion, said suspen-

sion and pivot rod having at least one length thereof having an eccentric crank-like configuration in engagement with said movable portion, said movable portion and said load bearing



portion of the plate-like member being devided along boundary lines allowing relative movement between said movable portion and said load bearing portion.

4,435,010

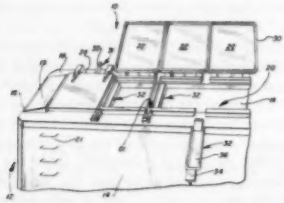
OVERHEAD ACCESS ASSEMBLY

Richard M. Mandel, 606 Glencoe Rd., Glencoe, Ill. 60022

Filed Jan. 11, 1982, Ser. No. 338,520

Int. Cl.³ B60P 7/02

U.S. Cl. 296—100 **23 Claims**



1. In a load carrying vehicle having a freight compartment formed cooperatively by a floor, laterally spaced sidewalls, opposed endwalls, and a roof member, the improvement comprising:

a framed opening in the roof member through which access may be gained to said compartment to accomplish loading and unloading of freight;

a plurality of hinged door panels for sealing said framed opening, each said door panel being selectively pivotable between an open and closed position;

at least one cross-brace spanning the framed opening and serving as a seat for said door panels, said cross-brace being hingedly secured adjacent one edge to said roof member so as to be pivotable substantially away from said roof opening; and

means for rigidly tying the ends of said cross-brace with said roof member, said means preventing shifting of the ends of the cross-brace relative to the roof member such that the cross-brace positively maintains the dimension of the roof opening as well as provides overall stability to the freight compartment;

said door panels and cross-brace being selectively pivotable away from the opening to create a desired opening size and to gain access to different regions of the freight compartment.

4,435,011

SEAT WITH A DUAL-ADJUSTABLE ARMREST

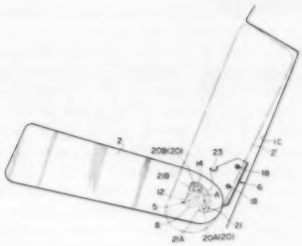
Hitoshi Hakamata, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 22, 1982, Ser. No. 360,168

Claims priority, application Japan, Mar. 26, 1981, 56-44477

Int. Cl.³ A47C 7/54

U.S. Cl. 297—113 **8 Claims**



1. A seat having an arm rest and a seat back, comprising:

(a) a first member fixedly attached to said seatback, said first member having a first stopper and a second stopper vertically spaced from said first stopper;

(b) a second member rotatably supported at an upper end thereof by said first member, said second member being rotatably connected at the lower end thereof with said arm rest;

(c) a projection protruding from said arm rest and being engaged with said first stopper when said arm rest is tilted to a first set position, said projection being engaged with said second stopper when said arm rest is placed in a second set position while said second member is rotated, said second set position being vertically spaced from being said first set position.

4,435,012

SEAT ASSEMBLY FOR BABY CARRIAGES

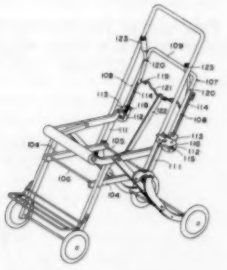
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Nov. 20, 1981, Ser. No. 323,447

Claims priority, application Japan, Dec. 2, 1980, 55-170452

Int. Cl.³ B60N 1/02

U.S. Cl. 297—355 **5 Claims**



1. A seat assembly for baby carriages comprising:

a seat,

a backrest foldably connected to rear end edge of said seat and constructed with a hard core material incorporated therein,

a hed guard holdably connected to the upper end edge of

said backrest and constructed with a hard core material incorporated therein,

a pair of backrest retaining members whose angle of inclination with a fixed member of the baby carriage main body can be changed,

angle fixing means for fixing changed angles of inclination of said backrest retaining members at a plurality of adjusted positions,

foldable lateral surface portions which, in cooperation with said head guard, define the lateral surfaces of a bag with the bottom surface thereof defined by said backrest, said lateral surface portions being connected to said backrest retaining members and formed of a foldable sheet material,

a head guard retaining member extending widthwise and serving to connect the upper end of said head guard above said backrest retaining members,

a seat shaping member including a portion extending in a U-shape, rotatably supported with respect to said backrest retaining members at opposite end of the U-shaped portion, with the widthwise extending portion of the U-shaped portion abutting against the back surface of said backrest, and

operative connecting means operatively connected to said seat shaping member to change the attitude of the seat shaping member in operative association with changes in the angle of inclination of said backrest retaining members, whereby when said backrest retaining members are in their raised state, the widthwise extending portion of said seat shaping member is brought into abutment against the back surface of said backrest to align said backrest and said head guard substantially in a plane while involving the folding of said foldable lateral surface portions and when said backrest retaining members are in their relatively lowered state, the widthwise extending portion of said seat shaping member is displaced to be positioned on the back surface of the backrest forming the bottom of said bag in such a manner as to form said bag, with said foldable lateral surface portions being stretched, with said backrest and said head guard crossing each other and with said backrest forming the bottom and said head guard and said foldable lateral surface portions forming the lateral surfaces of said bag.

4,435,013

RECLINER-BACK TILTING MECHANISM

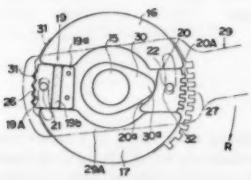
Takumi Arihara, Yokohama, Japan, assignor to Ikeda Bussan Co., Ltd., Yokohama, Japan

Filed Jun. 22, 1981, Ser. No. 276,281

Claims priority, application Japan, Jun. 21, 1980, 55-84239

Int. Cl.³ A47C *1/026*

U.S. Cl. 297—364 **14 Claims**



1. A mechanism for a recliner, comprising:

(A) a base plate secured to a seat of the recliner;

(B) an arm with one end pivotally mounted on said base plate and another end affixed to the recliner, said arm having a substantially circular opening concentric with the pivotal center of the arm;

(C) a first set of teeth formed along a section of said opening;

(D) a second set of teeth formed along a section of said opening substantially opposite said first set of teeth and substantially identical in pitch;

(E) a first retaining member having a first set of outer teeth adapted to be forced toward said first set of teeth (C) to be in mesh with said first set of teeth (C);

(F) a second retaining member having a second set of outer teeth for engaging at least a portion of said second set of teeth (D) to secure said arm (B) at a desired position; and

(G) means for moving said second retaining member (E) to engage said respective second sets of teeth to prevent angular movement of said arm (B), and to release engagement between said respective second sets of teeth to permit angular movement of said arm (B), at least a portion of said means disposed within said substantially circular opening in said arm (B);

said first and second retaining members (E) and (F) disposed in said substantially circular opening and adjustably supported in a plane including said opening; and

said first retaining member (E) adjustably supported in a plane including said opening with said first respective sets of teeth remaining slidingly meshed, even when said second respective sets of teeth are disengaged, allowing said arm (B) to pivot.

4,435,014

ELASTIC INSERT FOR SEATS, IN PARTICULAR FOR MOTOR VEHICLE SEATS

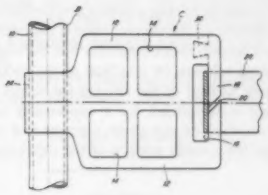
Enrico Gilardi, Robbio, Italy, assignor to Gestioni Riunite Toscana Gomma S.p.A., Robbio, Italy

Filed Jun. 16, 1981, Ser. No. 274,081

Claims priority, application Italy, Jul. 18, 1980, 23561 A/80

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—452 **12 Claims**



1. A flexible insert for cushions of seats, the seats having a support frame, the insert comprising:

a flexible plate (12) having an aperture (14) therein; a cross-bar (18) located at one end of said flexible plate and having an insertion slot (20,30) therein; and an elastic annular element (22) connected to said cross-bar of said flexible plate.

4,435,015

UNDERBODY CUSHIONING AND VENTILATING STRUCTURE AND GENERAL UTILITY FORMED PLASTIC SHEET

Helen H. Trotman, and Herbert H. Trotman, both of P.O. Box 807, Virginia Beach, Va. 23451

Continuation-in-part of Ser. No. 138,929, Apr. 10, 1980, abandoned. This application Aug. 26, 1980, Ser. No. 181,466

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—453 **9 Claims**

1. Underbody cushioning and ventilating structure comprising

a resilient first sheet member originally of uniform thickness throughout having an outside surface and an inside surface,

a foraminous second sheet member having an outside surface and an inside surface,

means attaching the marginal portions of the first and second sheet members to one another with their inside surfaces

opposed to form an enclosed space between the sheet members,

protuberances integrally formed from the material of the first sheet member and spaced from one another along all dimensions of the first sheet member, each protuberance projecting inwardly from the inside surface of the first sheet member toward the inside surface of the second sheet member,

the protuberances being formed in the first sheet member by the application of heat and pressure to a planar piece of the material of the first sheet member,

the material of the first sheet member extending between the protuberances being formed by the application of heat and

pressure so as to form on the outside surface a continuous pattern of minor cavities and contiguous raised surfaces,

the thickness dimension of the portions of the formed sheet between protuberances being non-uniform and shaped to cause turbulence in air currents flowing in contact with the outside surface thereof,

the protuberances having a height and projecting toward the inside surface of the second sheet a distance such that the first and second sheet members are maintained in spaced ventilating relation by coaction of the protuberances and the inside surface of the second sheet member when the structure is supported by a supporting surface on the outside surface of one sheet member and is supporting a body on the outside surface of the other sheet member.

4,435,016

IN SITU RETORTING WITH FLAME FRONT-STABILIZING LAYER OF LEAN OIL SHALE PARTICLES

Herman Wissenberg, Wheatland Township, Willa County, Ill.; Earl D. York, and Darrell D. Porter, both of Englewood, Colo., assignors to Standard Oil Company (Indiana) and Gulf Oil Corp., both of Chicago, Ill.

Filed Jun. 15, 1982, Ser. No. 388,610
Int. Cl.³ E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **19 Claims**

1. A process for retorting oil shale, comprising the steps of:

forming an underground retort of oil shale having at least one flame front-stabilizing layer of lean oil shale particles; and

moving a flame front substantially through said retort to liberate shale oil from said oil shale, including passing said flame front through said flame front-stabilizing layer to generally stabilize and enhance uniformity of said flame front and substantially minimize burning of said shale oil.

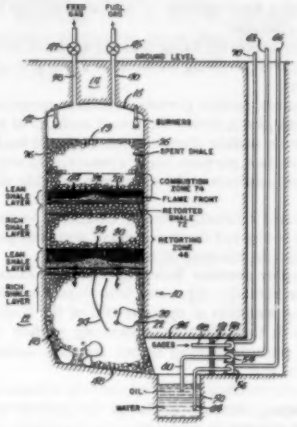
18. An underground retort, comprising:

an overburden defining a roof;

an elongated generally upright rubblized mass of oil shale particles in a subterranean formation spaced below said roof, said rubblized mass including alternate layers of rich oil shale particles and lean oil shale particles;

a flame front-stabilizing region of lean oil shale particles ranging in size from 0.01 inch to 0.1 inch extending generally across one of said layers;

burner means extending downwardly through said roof for igniting a flame front; and



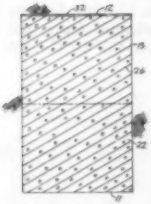
feed gas means for feeding an oxygen-containing gas into said flame front.

4,435,017

IN SITU OIL SHALE RETORT WITH DIFFERING UPPER AND LOWER VOID FRACTIONS

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Division of Ser. No. 133,409, Mar. 24, 1980, Pat. No. 4,326,752.
This application Oct. 13, 1981, Ser. No. 310,441
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—19 **4 Claims**



1. An in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary, bottom boundary, and vertically extending side boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale having an average void fraction up to 25%, the lower half of the fragmented mass having an average void fraction greater than 25% and the upper half of the fragmented mass having an average void fraction of at least 20% but less than 25% thereby resulting in the lower half of the fragmented mass having a higher average permeability than the average permeability of the upper half of the fragmented mass.

4,435,018

MINERAL WINNING MACHINE FOR "IN WEB" MINING SYSTEM

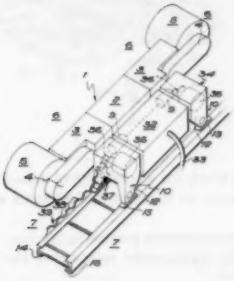
George A. Parrott, Wakefield, England, assignor to Dresser Europe S.A.

Filed Aug. 13, 1981, Ser. No. 292,532

Claims priority, application United Kingdom, Aug. 13, 1980, 8026378

Int. Cl.³ E21C *29/22*

U.S. Cl. 299—43 **12 Claims**



1. An "in-web" mineral winning machine for reciprocation along a mineral face, comprising an elongate machine body adapted, in use, to be located beyond a face side sidewall of an armoured conveyor extending in a predetermined direction along a mineral face, said machine body having a longitudinal axis extending in the predetermined direction, said conveyor also having a goaf side sidewall, a pick-carrying rotating cutting head carried by said machine body and rotatable about an axis extending transverse to the longitudinal axis of the machine body, power means housed within said machine body for rotating said pick-carrying cutting head, at least one bridge extending rearwardly from said machine body and adapted, in use, to overlie said conveyor, a trapping means located at said goaf side of said conveyor and being slidingly engaged by said at least one bridge, a machine haulage unit associated with said at least one bridge, and said at least one bridge being connected to said machine body by at least one joint providing for articulation of the machine body relative to said at least one bridge along an axis extending parallel to the longitudinal axis of said machine body.

4,435,019

BRAKE PRESSURE CONTROL VALVE

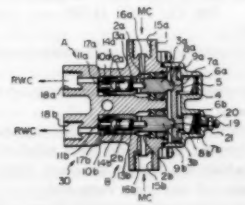
Yoshihiro Hayashida, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Aug. 13, 1981, Ser. No. 292,446

Claims priority, application Japan, Aug. 15, 1980, 55/115790[U]; Aug. 15, 1980, 55/115791[U]

Int. Cl.³ B60T *8/00*

U.S. Cl. 303—6 A **1 Claim**



1. A pressure control valve for limiting pressure supplied from a source of pressure to wheel brake cylinders, comprising:

a housing;

a pair of control valve units side by side in said housing, each valve unit having means to connect it to a respective source of pressure and to a respective wheel brake cylinder, and each having a piston valve member and a spring urging the piston valve member in the valve opening direction, each said valve unit transmitting pressure from the corresponding source of pressure directly to the wheel brake cylinder when the corresponding pressure is below a predetermined split pressure which is determined by the force of the respective spring and, when the pressure in the corresponding source of pressure exceeds the split pressure, the pressure transmitted to the respective wheel brake cylinder increases at a reduced rate as compared with the increase of pressure in the corresponding source of pressure;

a lever within said housing and extending across the ends of said pistons and being pivotally engaged only with said pistons, said springs being between said housing and the opposite side of said lever from the respective pivotal engagement points of said lever and said pistons;

stop means at each end of said lever between said lever and said housing for limiting the rocking movement of said lever relative to said pistons to a predetermined amount; and

adjustment means engaged with at least one of said springs for adjustment of the spring force for adjusting the split pressure in said control valve unit corresponding to said one spring.

4,435,020

DECELERATION DETECTING VALVE RESPONSIVE TO FAILURE IN FRONT BRAKE CIRCUIT

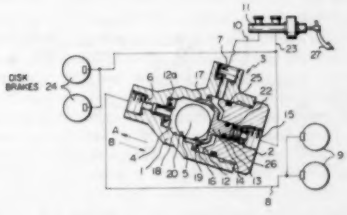
Masami Aono, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed May 19, 1982, Ser. No. 379,990

Claims priority, application Japan, May 20, 1981, 56-72841[U]

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **2 Claims**



1. A deceleration detecting valve for use in a vehicle hydraulic braking system including a master cylinder, a first circuit connecting the master cylinder with front wheel brakes, and a second circuit connecting the master cylinder with rear wheel brakes, said decelerating detecting valve comprising:

a valve body having a chamber with an inlet and an outlet for connecting said chamber in the second circuit;

a decelerating detecting ball received in said chamber, said valve body having a bore therein having one end opening out of said chamber and the other end adapted to be connected to the first circuit for receiving the hydraulic pressure of the first circuit;

a slidable member having a generally cup-shaped end located in and opening toward the interior of said chamber and a cylindrical end slidably and sealingly received in said bore, and said slidable member being slidable between a first position in which said cup-shaped end is remote

from said bore and a second position in which said cup-shaped end is adjacent said bore, the wall of said valve body defining said chamber having a ball guiding surface thereon for guiding movement of said ball to a position in said chamber for interrupting communication between said inlet and said outlet, and the inner circumferential surface of said cup-shaped end of said slidable member having a ball guiding surface thereon which, when said cup-shaped end is in said first position, forms a continuation of said ball guiding surface of said chamber and in said second position is spaced from said ball guiding surface of said chamber to leave a gap sufficient to prevent said ball from rolling from said cup-shaped end to said chamber wall guiding surface, and means for normally urging said slidable member toward said first position with a force less than the pressure produced on said slidable member by the hydraulic pressure in said second circuit, said ball normally abutting the bottom of the cup-shaped end of said slidable member and when the deceleration of the vehicle exceeds a predetermined amount, said ball rolls along the ball guiding surfaces to interrupt communication between the inlet and outlet, and when the pressure in the first circuit decreases relative to the pressure in the second circuit, said slidable member retracts to said second position and the gap is formed between the ball guiding surface on said cup-shaped member and the guiding surface on said chamber which prevents the movement of said ball from said guiding surface on said slidable member to the guiding surface on said chamber.

4,435,021

VEHICLE BRAKE ACTUATOR AND BRAKING SYSTEM

Hermann H. Hoenick, Immendorf, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

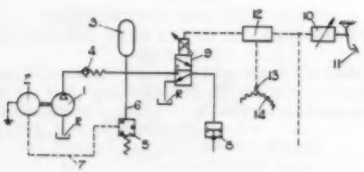
PCT No. PCT/GB80/00142, § 371 Date May 15, 1981, § 102(e) Date May 5, 1981, PCT Pub. No. WO81/00697, PCT Pub. Date Mar. 19, 1981

PCT Filed Sep. 15, 1980, Ser. No. 261,183

Claims priority, application United Kingdom, Sep. 15, 1979, 7932066

Int. Cl.³ B60T *8/04, 13/14;* **F16D** *55/224, 65/16*

U.S. Cl. 303—10 **18 Claims**



1. A vehicle brake actuator for urging at least one friction element into braking engagement with a cooperating element fixed to a member to be braked comprising pressure-applying means including a pressure cylinder and a piston slidable within the cylinder and operably associated with at least one said friction element to urge at least one said friction element into braking engagement with said cooperating element, a pressure accumulator, a supply of pressure fluid, a pump positioned within said cylinder operably connected to said supply of pressure fluid and said accumulator to charge the accumulator with said pressure fluid, valve means operably connected to said supply of pressure fluid and said accumulator to control the supply of pressure fluid from said accumulator to said pressure-applying means, brake control means, and an electrically-operated solenoid operably connected to said valve means and said brake control means to operate said valve means to control said pressure fluid supply in response to the action of said brake control means.

4,435,022

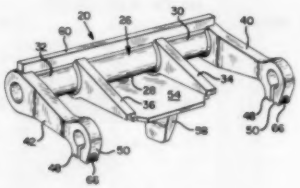
TRACK BLOCK

Brett A. Whitelaw, 2575 NE. Kathryn, Unit 28, Hillsboro, Oreg. 97123

Filed Jan. 25, 1982, Ser. No. 342,082

Int. Cl.³ B62D *55/20*

U.S. Cl. 305—53 **2 Claims**



1. A track block for a track-laying vehicle coupleable with other like blocks to form an endless track strand, said block comprising

a straddled-connection portion in the form of a unitary beam extending transversely relative to the block's intended travel axis,

a pair of straddling-connection link portions integral with and joined to opposite ends of said beam and extending therefrom in a common direction generally paralleling said travel axis, said link portions being adapted to receive and straddle such a beam in an adjacent block, and

platform-like road-wheel bearing means integral with and joined only to said beam, and extending therefrom in a cantilevered fashion generally in the same direction as said link portions, said bearing means being adapted to transmit received road-wheel bearing forces directly to said link portions solely through said beam.

4,435,023

INTERNALLY ACTUATED SPERICAL BEARING

Thomas E. Boiner, Fayetteville, Tenn., assignor to Thiokol Corporation, Chicago, Ill.

Filed May 6, 1981, Ser. No. 260,941

Int. Cl.³ F16C *11/06*

U.S. Cl. 308—2 R **13 Claims**

1. An internally actuated spherical bearing comprising

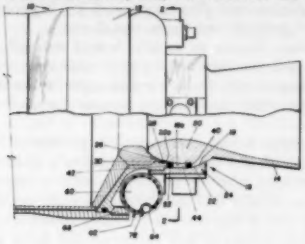
an outer race,

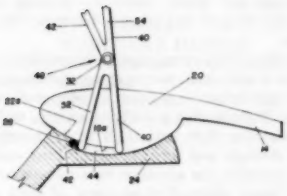
an inner race positioned for rotation, about an axis, within said outer race,

means for providing an annular chamber around said inner race, said chamber having opposed relatively movable edge walls which are fixedly attached, respectively, to said outer race and said inner race, and

first and second elongated expansible loop seal actuators, each of said actuators having a pair of ends and arranged in end-to-end relation within said chamber, with each

actuator wrapped around approximately 180° of the inner race in each semi-circle, and with each of the pairs of





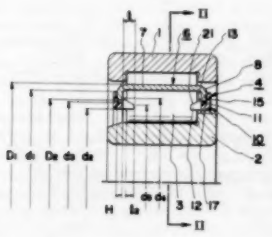
adjacent ends of said actuators being positioned proximate the axis of said inner race.

4,435,024

BEARING CAGES FOR SUPPORTING AND RETAINING ROLLER ELEMENTS IN CYLINDRICAL ROLLER BEARINGS

Kenichi Tagawa, and Takao Iguchi, both of Fujisawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1982, Ser. No. 392,539
Claims priority, application Japan, Jul. 24, 1981, 56-116141
Int. Cl.³ F16C *33/46*
U.S. Cl. 308—217 **9 Claims**



1. A cage assembly for retaining and supporting cylindrical, bearing rollers comprising:

(a) an annular cage member, the cage member including:

(1) a straight cylindrical portion having a plurality of pockets formed therein for receiving a plurality of bearing rollers,

(2) at least one flange provided on one axial end of the cylindrical portion, the flange having an axial outer side face, a radial inside edge face and a radial outer edge,

(b) at least one plastic retaining member, the roller retaining member comprising:

(1) an annular ring portion having an annular side face adapted to be contacted by the axial outer side face of the flange,

(2) an annular fitting face contiguous with the annular side face,

(3) a plurality of teeth having a radial outer face and a radial inner face, the teeth extending axially inwardly from the ring portion and positioned between adjacent rollers for preventing slipping down or out of any bearing roller, and

(4) a plurality of lips integrally formed with the ring portion for locking the roller retaining member to the flange,

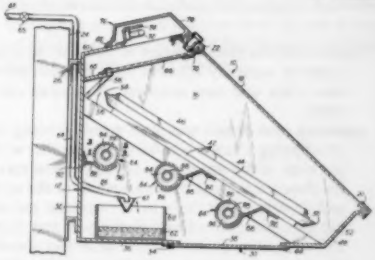
each of the teeth having a face extending axially inward from a radial outer tip end and inclining radially inward such that the roller retaining member is coupled to the cage member by pushing the retaining member axially inward from outside the flange of cage member.

4,435,025

CLIMATE CONTROL SYSTEM

Steven A. Weintraub, 200 W. 86th St., New York, N.Y. 10024

Filed Nov. 27, 1981, Ser. No. 325,164
Int. Cl.³ B01F *3/06*
U.S. Cl. 312—31 **14 Claims**



1. A system for controlling the climate of a volume within which an art object or the like is situated, comprising, in combination: a general housing defining a first control volume and a second display volume, said second volume being contiguous to or a part of said first volume,

at least one smaller housing of predetermined size and shape disposed within said first control volume for housing a first control substance capable of removing moisture from or adding moisture to the confines of said general housing,

a container disposed within said first control volume for holding a second control substance capable of holding and giving up moisture to the confines of said general housing,

means for providing a fluid to said container, and

means for supporting said smaller housing, said container further comprising a trough disposed within said first control volume, said trough being positioned directly above the length of said container, said trough being capable of being rotated and transferring said fluid in said trough into the length of said container,

a tube for transferring said fluid from a source of fluid outside said general housing to said trough,

means for controlling the flow of said fluid in said tube, and

means for rotating said trough.

4,435,026

MODULAR STACKING TRAYS

Michael R. Johnson, 2725 Foxfire Ct., Clearwater, Fla. 33519

Filed Jun. 7, 1982, Ser. No. 385,694
Int. Cl.³ A47F *1/00, 1/14, 1/12*
U.S. Cl. 312—45 **4 Claims**

1. A dispensing device, comprising,

a plurality of tray members having a common configuration and dimenstion so as to be interchangeable with one another,

said tray members having a pair of substantially parallel, transversely spaced, upstanding, sidewalls,

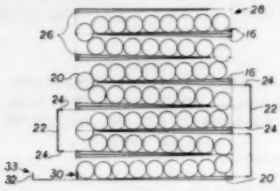
a first and second ramp means disposed in interconnecting relation to said sidewalls,

said first and second ramp means having a common length, said common length equal to the length of said sidewalls less a length slightly greater than the outside diametr of a beverage can to be dispensed by said device,

said first and second ramp means extending from opposite ends of said sidewalls,

said tray members being open-ended,

a plurality of detachably secured end plate members for capping the open ends of said tray members,



each of said end plate members of sufficient dimension to cap a pair of vertically adjacent open ends of said tray members when said tray members are stacked one atop the other,

opposing ones of said end plate members being disposed in overlapping relation relative to one another so that opposite ends of the uppermost and lowermost tray members are disposed in open communication to the space around said device so that items to be dispensed are loaded into the uppermost one of said plurality of tray members and unloaded from the lowermost one of said plurality of tray members, said charging and discharging accomplished at longitudinally opposite ends of said device.

4,435,027

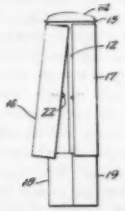
SELF-LOCKING HINGED DOOR CABINET AND LATCH FOR THE SAME

Joseph E. Prather, Bernardsville; Ramzi A. Khalifa, Rutherford, and Peter B. Wenzler, Long Valley, all of N.J., assignors to Edson Tool & Manufacturing Co., Inc., Belleville, N.J.

Filed Mar. 25, 1981, Ser. No. 247,601

Int. Cl.[3] **E05C** *7/06*

U.S. Cl. 312—222 **11 Claims**



1. An apparatus cabinet having a frame comprising parallel first and second side members each providing a portion of the outside surface of the cabinet, at least one spacing member between the side members, a cover member, base housing pieces attached to the side members to enclose the lower portion of the cabinet, and at least one door having lateral lips extending around cabinet corners to overlap said side members, being hinged to said first side member and further comprising:

a latch on the interior side of said second side member, said latch having an access slot for forcing said door and having an inclined surface guide at the bottom thereof and

a tongue on said door positioned for engagement in said latch through said access slot thereof;

said door having its middle bowed inwardly in the unstressed condition of the door with respect to said lips about a vertical axis of curvature, for facilitating clearance of the outer lip from the cabinet corner in closing the door,

said tongue having teeth on an edge thereof for engaging said latch and projecting upward at a small angle to the horizontal whereby the bottom edge of said tongue may automatically find said inclined surface guide of said access slot as said door is normally closed and the further sliding contact of said tongue on said guide will raise the door in further closing to the extent necessary for correcting sag,

said latch having a pivoted detent for catching said teeth of said tongue and spring means for pressing said detent against said tongue, said pivoted detent having an actuating arm,

said latch also having a freely rotatable cam finger, rotatably mounted in said latch, for engaging said actuating arm of said pivoted detent of said cam for release of said tongue, said cam finger having a shaft for rotating said cam, said shaft extending from said latch to the exterior of said cabinet through said second side member and having a shaped extremity for actuation by a suitable tool,

said door being made of sheet metal of such gauge and flexibility that the closing and locking of said door with insertion of said tongue in said latch substantially straightens out the bow of the middle portion of said door against adjacent portions of the cabinet overlapped respectively by the top and bottom edges of said door.

4,435,028

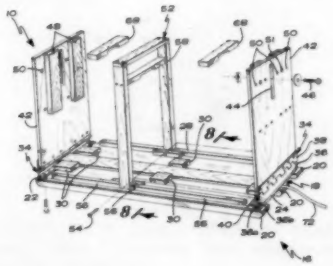
HINGED CONTAINER FOR RELAY RACKS

Eric M. Rivkin, Minnetonka, Minn., assignor to Liberty Carton Co., Minneapolis, Minn.

Filed Mar. 9, 1981, Ser. No. 241,575

Int. Cl.[3] **A47B** *43/00*; **A47G** *19/08*

U.S. Cl. 312—258 **3 Claims**



1. A hinged container for a relay rack, said relay rack comprising first and second end walls, each said end wall comprising an inner surface and further comprising at least one hole therein, said container in combination with said rack comprising:

a base, said base comprising:

a platform member having first and second ends and first and second sides; and

pallet means for lifting said pallet above a surface, said pallet means comprising at least one opening therein for insertion of a lifting device, each said opening extending between said ends and parallel to said sides;

a first end panel;

a second end panel, said end panels being slightly longer than said end walls;

first and second hinges, each said hinge comprising:

a hinge base portion fixedly attached to said base at one of said ends;

a hinge side portion fixedly attached to one of said end panels, said hinge side portion being hinged to said hinge base portion, and wherein said hinge base portion is L-shaped in cross-section with a horizontal panel parallel and attached to said platform member and a vertical panel, said vertical panel being hinged to said hinge side portion, said vertical panel extending substantially above said platform member; and

means for securing said end panels to said rack end walls, the distance between said end panels being substantially equal to the distance between said rack end walls, said securing means cooperating with said inner surfaces and holes.

4,435,029

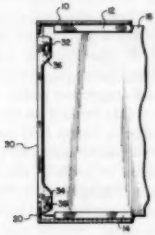
SLIDE LOCK HANDLE

Robert W. McKenzie, Lewisville, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 6, 1981, Ser. No. 280,036

Int. Cl.³ A47B *88/00*

U.S. Cl. 312—320 **7 Claims**



1. A locking handle for mounting a circuit card module to a card cage, comprising an elongated flexible member secured at its distal ends to the front facing edge of said module, with one end of said handle engaging said cage in a locked position and being pivoted and translated to an unlocked position in response to removal pulling force applied to said handle, flexing and bowing the latter, and wherein said handle is pivoted back to an unbowed position flat against said module edge in response to insertion pushing force applied against said handle, said member including means for causing said one end of said handle to remain in said unlocked position during insertion, and wherein after insertion said handle is translated to said locked position with one end thereof engaging said cage, said handle laying flat against said front edge of said module during said insertion such tht insertion force is applied against said handle, obviating user engagement of a raw circuit card module edge.

4,435,030

BAR SOAP HOLDER AND DISPENSER

James T. Haven, 537 N. Clark St., Orange, Calif. 92667

Filed Jul. 14, 1981, Ser. No. 283,206

Int. Cl.³ A47K *5/08*

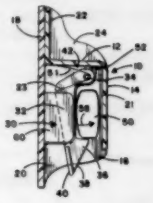
U.S. Cl. 312—351 **10 Claims**

1. A soap bar holding and dispensing device which comprises:

(a) a housing having a closed top, sidewalls and an open bottom;

(b) a soap bar rack within said housing having at least one vertical leg with a distal, lateral projecting foot to receive a bar of soap, pivotably mounted at its upper end to the upper portion of said housing contained completely within said sidewalls and projecting through said open bottom;

(c) at least one rib on a first inside sidewall of said housing in juxtaposition to said leg and projecting substantially to the leading edge of said foot when said rack is pivoted into an open position, towards said first wall to dislodge a bar of soap received on said foot for fall from said housing; and



(d) biasing means urging said soap bar rack to a closed position away from said rib; whereby said rack can be swung open to dispense a received soap bar or to receive a soap bar, and released to close with said foot beneath said soap bar, securing said bar in said device.

4,435,031

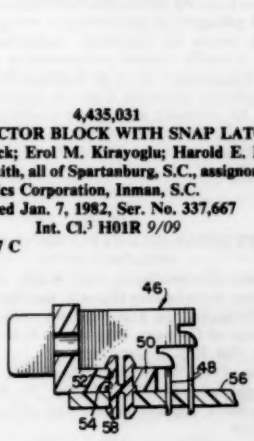
CONNECTOR BLOCK WITH SNAP LATCH

Richard W. Black; Erol M. Kirayoglu; Harold E. Leiter, and Richard C. Smith, all of Spartanburg, S.C., assignors to Holmberg Electronics Corporation, Inman, S.C.

Filed Jan. 7, 1982, Ser. No. 337,667

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—17 C **5 Claims**



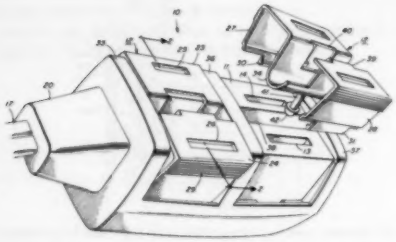
1. The combination of a circuit board having a first mounting hole and a plurality of circuit board holes adjacent to the mounting hole; and a connector block having an insulating body with a mounting surface engaging one side of the circuit board at the mounting hole, a first flexible snap latch unitary with and projecting outwardly of the body, and a series of contact terminals within the body with each terminal including a terminal tail extending outwardly of the body, past the mounting surface and into one of the circuit board holes, the snap latch being formed from a heat-shrink plastic material and including a pair of elongate and longitudinally shrunk tensile prongs and radially outwardly facing latches on the ends of the prongs, the prongs extending through the first mounting hole and the latches engaging the other side of the circuit board, whereby the snap latch secures the block tightly against the circuit board.

4,435,032

TERMINAL CONNECTOR WITH SAFETY DEVICE

Allen P. Abramson, Essex, and Theodore R. Stiles, Somerset, both of N.J., assignors to Challenger Circle F, Inc., Trenton, N.J.

Filed Jun. 14, 1982, Ser. No. 388,295
Int. Cl.³ H01R 13/447
U.S. Cl. 339—36 12 Claims



1. A terminal connector for electrical extension cords comprised of:

(a) a connector body, of electrically insulating material, including a pair of prong receiving contacts internal to said connector body; and a pair of prong receiving passageways communicating with said contacts; and

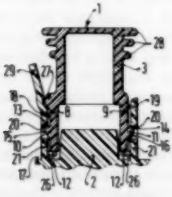
(b) a safety cover, of electrically insulating material, attached on said connector body, said safety cover including: two blocking plates, each blocking plate covering one of said passageways and having a prong receiving hole; biasing means for resiliently separating said blocking plates, normally causing corresponding prong receiving holes and passageways to be misaligned thereby preventing access to said prong receiving contacts; and gripping means for manually urging said blocking plates together thereby aligning corresponding prong receiving holes and passageways allowing access to said prong receiving contacts.

4,435,033

TWO-PART SEPARABLE ELECTRICAL CONNECTION ARRANGEMENT

Willi Gansert, Kornwestheim; Gert Jakob, Stuttgart; Lothar Ruttkowski, Ludwigsburg-Ossweil; Siegfried Goetzke, Bietigheim-Bissingen, and Kurt Stammler, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 283,357, Jul. 14, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,389
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031261
Int. Cl.³ H01R 13/635
U.S. Cl. 339—45 M 6 Claims



1. A two-part elongated separable electrical connection arrangement comprising

a first elongated molded plastic part (1) including two spaced longitudinal first-part sheet-like first side walls (8, 9) molded on said first part;

a second elongated molded plastic part (2) including a base, and two spaced resilient projecting longitudinal second-part second side walls (18, 19) molded on said second part, fitting over said first side walls, whereby said first side walls will form inner side walls of the connection arrangement, and said second side walls will form outer side walls, when the connection arrangement is in connected position;

end walls extending transversely to the side walls,

means (5, 7) separably, releasably connecting and locking said parts comprising

separable hinge means (5, 7) located transversely to the longitudinal direction of the side walls of said parts at an end portion adjacent the end walls, and separably, pivotally connecting said parts together to provide, upon engagement of the hinge means, a pivotal connection of said first and second parts (1,2) in advance of complete engagement of the parts, while permitting complete separation of said first and second parts about a hinge axis transverse to the longitudinal side walls (8, 9; 18, 19);

interengaging projection-and-recess means (10, 11; 20) formed on said first longitudinal side walls and on the second longitudinal side walls, respectively, at aligned locations remote from said hinge means including

a first projection (10) extending outwardly from one of the inner walls of said first part (1) and having a flat engagement surface (13) extending at approximately right angles with respect to engagement, or disengagement movement of said respective parts;

a second projection (11) formed on the other side wall (9) comprising a ridge or bump (11) having obtuse angles with respect to the other side wall of said one part;

an elongated opening in each of the outer walls of the second part having engagement surfaces (20) parallel to the flat engagement surface (13) on said projection,

whereby, upon hinging, pivotal movement about said transversely located hinge means (5, 7) and engagement of the first and second parts, with the side wall of the first part within the second part, said projection and said opening will lock said parts together;

an integral unlocking or release means including

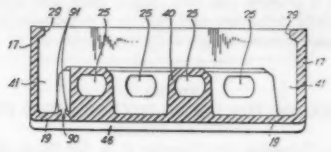
a release cam or fulcrum projection (27) integral with the inner wall of said first part and located adjacent to, and upwardly—in removing direction of the second part—from the engagement surface (13) formed by the first projection (10) of the interengaging projection-and-recess means and extending outwardly from the inner wall of said first part;

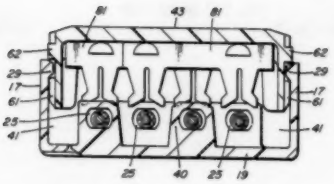
and an integral extension flap (29) formed on the immediately adjacent outer side wall (18) of the second part, extending upwardly and beyond said release cam or fulcrum projection (27) to provide a lever and gripping and operating surface for resilient outward deflection of the region or zone of the outer wall immediately adjacent the release cam or fulcrum upon compression of the outer side wall at a point upwardly from, and remote from the fulcrum projection towards the adjacent inner side wall, resulting in tilting movement of the portion of the outer side wall adjacent the projection with respect to the inner side wall and cause release of the projection-and-recess means and, outward bending of the portion of the outer wall adjacent the flat engagement surface (13) of the first projection releases the engagement of surface (20) in the outer wall from the engagement surface (13) of the projection on the inner wall by outward deflection of the zone of the outer wall adjacent said projection from the inner wall, and permits release of said second part by pivoting about said separable hinge means.

4,435,034
CONNECTORS WITH INSULATION-DISPLACING TERMINALS

Sharanjit S. Aujla, Kanata, and John D. Lee, Manotick, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 8, 1981, Ser. No. 309,606
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—98 **17 Claims**





1. A connector for connecting at least two conductors, comprising a body and a cap each of hollow box-like structure, the cap fitting into or over the body;

the body comprising;

a bottom web;

front and back walls and opposite end walls extending up from said bottom web;

a central body portion having front, central and rear ribs, the rear rib integral with the back wall;

four apertures extending through said front wall and said front, central and rear ribs, the apertures extending in spaced parallel array to form first, second, third and fourth apertures;

the front and central ribs connected by first spaced sections to define a first two aligned spaced apart channels one channel connecting with the first aperture and the other channel connecting with the third aperture;

the central and rear ribs connected by second spaced sections, to define a second two aligned spaced apart channels, one channel connecting with the second aperture and the other channel connecting with the fourth aperture;

the cap comprising;

a top web;

front and back walls and opposite side walls, extending down from said top web;

the front wall being of reduced height for at least a major part of its length, relative to said side walls, to define an open sided aperture in the front wall;

front and rear ribs extending down from said top web, spaced from and parallel to the front and back walls, and a central rib extending down from said top web intermediate the front and rear ribs, parallel to and spaced from the front and rear ribs, to define four parallel channels, the channels between said central rib and said front and rear ribs adapted to receive insulation displacing terminals;

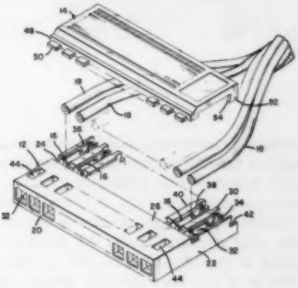
a further channel extending along inside each side wall;

interengaging formations on the side walls of the cap and the end walls of the body, said formations interengaging to retain said cap and said body in a first initial assembled position with said terminals entered in the channels but clear of said apertures in said body, and also adopted to interengage to retain said cap and said body in a second, fully inserted position with said terminals extending across said apertures in said body and in electrical connection with the conductive cores of conductors positioned in said apertures in said body.

4,435,035
MASS TERMINATABLE SINGLE ROW CONNECTOR ASSEMBLY

Donald A. Berry, Elizabethtown; David J. Fabian, Harrisburg, and John E. Lucius, Enola, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1981, Ser. No. 249,541
Int. Cl.³ H01R *13/514*
U.S. Cl. 339—99 R **8 Claims**



1. An electrical connector assembly comprising:

an elongated housing of rigid insulative material having a plurality of terminal passages extending in a single row from a rear end through said housing to open on a front mating face, each said passage being fully enclosed at the mating face and outwardly open channel shaped at the rear end remote from said mating face, said rear end having a stepped profile;

a plurality of terminals each mounted in a respective one of said passages, each said terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passage and an insulation displacing rear portion lying in and accessible from said rear channel-shaped portion; and

a cover having a forward end profiled to be received in said fully enclosed portions of said passages to hold said cover in assembly therewith and a plurality of depending rear legs each engageable with a respective portion of said rear stepped profile between each said passage and at both ends of said housing to hold said cover thereagainst while separating individual conductors leading thereto into alignment with respective passages, whereby terminals pre-loaded in said housing can be terminated by a low force insulation displacing movement and enclosed by application of said cover member.

4,435,036
OPTICAL FIBER CONNECTOR WITH MUTUALLY ENGAGING, OPPOSITELY TAPERED SURFACES

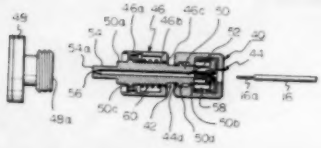
Tomio Sasakawa, Tokyo, Japan, assignor to Anritsu Electric Company Limited, Tokyo, Japan

Filed May 27, 1981, Ser. No. 267,966
Claims priority, application Japan, May 30, 1980, 55-71454
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **3 Claims**

1. A fiber optic cable connecting device for connecting a

fiber optic cable to a connector having a receptacle, comprising:

a fiber optic cable guide member including a fiber insertion portion having a first insertion bore for receiving said fiber optic cable, a fitting portion integral with said fiber insertion portion for being plugged into said receptacle, said fitting portion having a tip portion formed with a second insertion bore communicating with said first insertion bore for receiving a bare fiber of said fiber optic cable and a fiber fixing portion integral with said fiber insertion portion for fixing said fiber optic cable, said fiber fixing portion including a locking portion, with the outer surface of said locking portion being tapered along the direction of the axis of said fiber insertion guide member; and



a pressuring member slidably disposed on said fiber insertion portion for movement within a restricted range in said axial direction, said pressuring member being provided with a locking portion having an aperture formed therein to receive said locking portion of said fiber insertion portion, said aperture having the inner surface thereof tapered in the opposite direction to that of said locking portion of said fiber insertion portion, said locking portions of said fiber insertion portion and pressuring member being disposed to mutually abut such as to cooperate in fixing said fiber optic cable within said locking portion of said fiber insertion portion when said pressuring member is moved to one end of said range of axial movement and to release said fiber optic cable when said pressuring member is moved to the other end of said range.

4,435,037

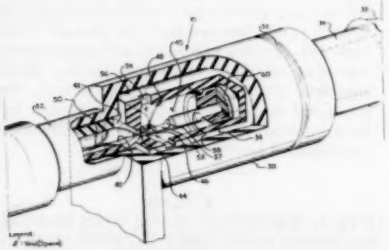
FIBER OPTIC CONNECTOR WITH DEFORMABLE MOUNTING POST

Edward A. Abramson, Newark, Del., and Peter K. Townsend, Camp Hill, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1981, Ser. No. 318,944

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 **8 Claims**



1. An apparatus for coupling an optical fiber to a light emitting or injection laser diode comprising

a light source connector body at least partially retained within a first dielectric housing, said connector body containing an electrically conducting rod and a deformable post containing a plane surface extending from said rod,

said diode permanently mounted on said plane surface,

at least one aligning port through said connector body exposing said deformable mounting post,

an optical fiber firmly mounted within a second housing, said second housing connected to said first housing so that an end of said optical fiber is in juxtaposition to said diode,

means for moving said post until maximum light from said diode is coupled into said optical fiber and means for plastically deforming said post to a permanent position once said maximum light coupling is achieved.

4,435,038

CONNECTOR FOR USE IN BUTT SPLICING TWO OPTICAL FIBRES

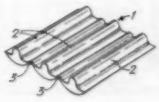
Lucas Soes, Rosmalen, and Eduardus F. A. Ten Berge, Drunen, both of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

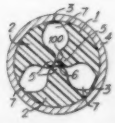
Filed Jan. 13, 1982, Ser. No. 339,209

Claims priority, application United Kingdom, Jan. 14, 1981, 8101105

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **4 Claims**





1. A connector for use in butt splicing two optical fibres, comprising a tubular member of deformable material, and three elongate members receivable in the tubular member to define a central passage to receive end portions of the two optical fibres to be spliced, in which the tubular member is a right-circular cylindrical member, and the three elongate members are of similar transverse cross-section and are integrally formed in side-by-side relationship joined by two webs, the transverse cross-section of each elongate member being such that the three elongate members can be folded together by bending of the webs, to define a substantially circular overall cross-section support body receivable in the tubular member, the innermost parts of the three elongate members together defining the central passage, and such that there are radial spaces between the three elongate members throughout the length of the support body.

4,435,039

METHOD AND APPARATUS FOR IMPROVING IMAGE QUALITY OF A REDUCTION/ENLARGEMENT GRADIENT INDEX LENS ARRAY

William L. Lama, Webster, and James D. Rees, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

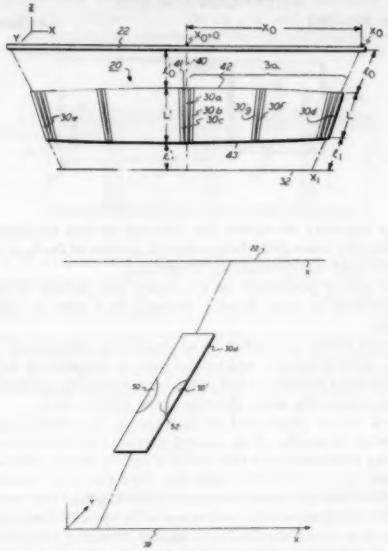
Filed Nov. 2, 1981, Ser. No. 317,694

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.25 **5 Claims**

1. An optical system for transmitting an image of an object lying in an object plane onto an image plane at magnification

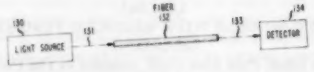
other than unity, said system including a lens array comprising a plurality of gradient index optical fibers bound together in side by side relationship, the fibers arranged so that those in the center of the array have their axes substantially perpendicular to the object and image plane while adjoining fibers are progressively tilted in fan-like fashion towards the ends of the array so that their axes increasingly depart from said substantially perpendicular orientation, the array further including masking means adapted to permit maximum light transmittal through central areas of said array but to transmit increasingly less light through fibers extending in the array direction.



4,435,040
DOUBLE-CLAD OPTICAL FIBERGUIDE

Leonard G. Cohen, and Wanda L. Mammel, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 3, 1981, Ser. No. 299,213
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.33 **18 Claims**



1. An optical communication system comprising a light source and a detector, further comprising silica-based single-mode optical fiberguide comprising

(a) a core region having an effective radius and a first effective refractive index,

(b) an inner cladding region concentrically surrounding the core, the inner cladding having an effective outer radius and a second effective refractive index, and

(c) an outer cladding region concentrically surrounding the inner cladding, having an effective thickness and a third effective refractive index,

CHARACTERIZED IN THAT

(d) the difference between the first and the third index is between about 0.1% and about 0.4% of the value of the third index, with the first index being larger than the third index,

(e) the difference between the third and the second index is between about 1 times and about 3 times the difference between the first and the third index, with the third index being larger than the second index,

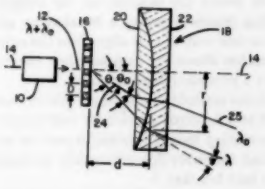
(f) the effective core radius is between about 0.5 times and about 0.8 times the effective outer radius of the inner cladding region, and

(g) the effective outer radius of the inner cladding region is at least about 5 μm.

4,435,041
CHROMATIC ABERRATION CORRECTION IN A MULTIWAVELENGTH LIGHT BEAM DEFLECTION SYSTEM

Ernest J. Torok, and William A. Harvey, both of Minneapolis, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 382,857
Int. Cl.³ G02B 5/18
U.S. Cl. 350—162.24 **7 Claims**



1. A light deflection system including chromatic correction comprising:

an alterable diffraction grating;

a source of a multiwavelength input light beam that is directed along an input optical axis that intersects said grating;

said diffraction grating generating a plurality of first order light beams from said input light beam, each different wavelength of said input light beam being deflected a correspondingly different angle from said optical axis for generating a corresponding first order light beam;

first and second lenses oriented with their optical axes coaxial with said input optical axis, said first lens spaced a focal length from said grating, said second lens spaced a distance from said first lens that is the sum of focal lengths of said first and second lenses;

first and second correction plates oriented with their optical axes coaxial with said input optical axis and intermediate said first and second lenses, said first plate positive, said second plate negative and spaced a distance apart such that their focal points coincide for at least three wavelengths of interest.

4,435,042
VEHICLE MIRROR AND SUPPORT ASSEMBLY

Denis Wood, Dublin, Ireland; John F. Thomas, Jr., Holland, Mich.; Barry Dipper, Cardiff, Wales; Philip D. Stegenga; John H. Veltkamp, both of West Olive; William L. Katsma, Jenison, Mich., and Robert L. Norton, Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Jun. 24, 1981, Ser. No. 276,838
Int. Cl.³ G02B 17/00
U.S. Cl. 350—281 **71 Claims**

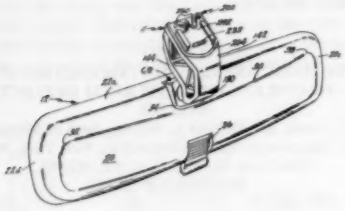
1. A breakaway rearview mirror assembly adapted to be slidably mounted on a button secured to a vehicle windshield, said mirror assembly comprising:

a breakaway rearview mirror bracket, said bracket including:

a one-piece body defining a front surface, a rear surface, a top end and a buttom end;

a pair of resilient, opposed, elongated clips which define grooves dimensioned to receive the button in a tongue and groove fashion;

a pivot and tension member positioned on said rear surface in between said clips, said pivot and tension member dimensioned to tension the clips after receipt of the button by engaging the button and urging it against said clips to



securely locate the bracket on the button, said member including means forming a breakaway pivot positioned closer to one end of said clips than the other for pivoting said bracket about the button when the mirror assembly sustains a predetermined impact;

a mirror head assembly including a mirror case having a rear surface and a mirror carried by said mirror case; and

mirror mounting means forming a part of said bracket and said head assembly for adjustably mounting said mirror case to said bracket.

4,435,043

COMPOSITE MIRROR PANELS

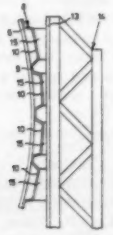
Guy Mertens, Namur, and Pierre Laroche, Ham-sur-Heure, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed May 4, 1982, Ser. No. 374,908

Claims priority, application United Kingdom, Aug. 21, 1981, 8125665

Int. Cl.[3] **G02B** *5/10;* **B32B** *3/28*

U.S. Cl. 350—288 **18 Claims**



1. A composite mirror panel comprising a front flexible vitreous sheet whose rear face is provided with a reflective coating to form a mirror, a flexible waterproof first backing sheet water-tightly bonded to the rear of said mirror so as to form a flexible laminate, and a corrugated backing sheet which is bonded to said first backing sheet along crests of the corrugations to form a said composite panel which is flexible about axes parallel to said corrugations.

4,435,044

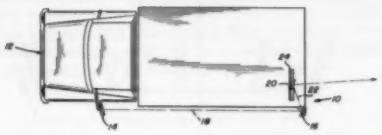
REAR VIEW MIRROR ASSEMBLY

Elliott Hanin, Potomac, Md., assignor to IRV Hanin, Miami Beach, Fla.

Filed Mar. 17, 1982, Ser. No. 359,063

Int. Cl.[3] **G02B** *5/08, 5/10*

U.S. Cl. 350—302 **8 Claims**



1. An assembly of mirrors for viewing an area extending longitudinally rearwardly from a central portion of the back of a vehicle, said mirror assembly comprising:

a first mirror positioned on a forward side portion of the vehicle so as to be directly viewable by a vehicle occupant;

a second mirror positioned on an upper rear side portion of the vehicle, the first and second mirrors cooperating with each other to define a first optical axis extending upwardly and rearwardly along the side of the vehicle; and

a third mirror positioned on the top of the vehicle and spaced forwardly of the second mirror, said third mirror being positioned such that said first optical axis is reflected from said second mirror onto said third mirror to thereby define a second optical axis, said second optical axis being reflected downwardly and rearwardly by said third mirror so as to permit viewing of an area extending longitudinally rearwardly from a central portion of the back of the vehicle.

8. A method of mounting mirrors so as to provide viewing of an area extending longitudinally rearwardly from a central portion of the rear of the vehicle, said method comprising:

positioning a first mirror on a forward side of the vehicle so as to be directly viewable by an occupant of the vehicle;

positioning a second mirror on an upper rear side of the vehicle so that the reflecting surfaces of the first and the second mirrors define a first axis extending upwardly and rearwardly along the side of the vehicle; and

positioning a third mirror on the top of the vehicle forwardly of the second mirror so that the first axis is reflected onto the reflecting surface of the third mirror thereby defining a second axis, the reflecting surface of the third mirror being positioned so as to reflect the second axis rearwardly from the back of the vehicle to thereby provide viewing of an area directly behind and extending rearwardly from the rear of the vehicle.

4,435,045

BUILT-UP MIRROR WITH REDUCED TEMPERATURE GRADIENT

Lawrence Fried, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1982, Ser. No. 372,877

Int. Cl.[3] **G02B** *5/08, 522, 5/24;* **B32B** *3/00*

U.S. Cl. 350—310 **9 Claims**

1. A frit bonded, built-up glass mirror for use in orbital space, said miror comprising:

a glass front wall;

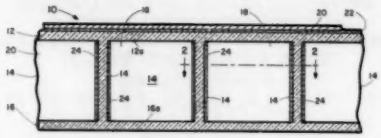
a glass rear wall disposed in predetermined spaced relation to said front wall;

a plurality of glass spacer walls interconnecting said front and rear walls and arranged in a pattern defining a plurality of cells the cell ends of which are defined by the inner surfaces of said front and rear walls and the cell sides of which are defined by the surfaces of said spacer walls;

a reflective coating on the outer surface of said front wall;

said inner surfaces of said front and rear walls being characterized as relatively highly emissive and absorptive of radiant energy; and

said surfaces of said spacer walls being coated with a reflective layer of highly specular material, whereby radiant energy emitted from one of said end walls of a cell is reflected to and absorbed by the other of said end walls of said cell.



6. In a mirror built-up of frit bonded glass wall components to comprise a plurality of cells having front, back and side walls, the front walls of which carry an outwardly facing reflective surface adapted to be cyclically directed toward and from the sun, the improvement comprising a reflective coating on the surfaces of said side walls, so that energy radiated from the inner surface of said front walls of said cells is reflected by said reflective coating on said side walls and absorbed by the rear walls, whereby maximum temperature differences between said front and rear walls are reduced.

4,435,046

LIQUID CRYSTAL DISPLAY DEVICE

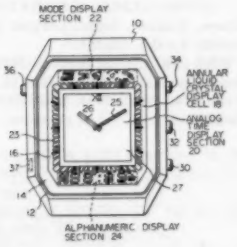
Katsuo Nishimura, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 6, 1981, Ser. No. 251,452

Claims priority, application Japan, Apr. 8, 1980, 55-45240; Oct. 28, 1980, 55-151224

Int. Cl.³ G02F 1/13

U.S. Cl. 350—334 **10 Claims**


MODE DISPLAY SECTION 22
ANNULAR LIQUID CRYSTAL DISPLAY CELL 18
ANALOG TIME DISPLAY SECTION 20
ALPHANUMERIC DISPLAY SECTION 24

1. A liquid crystal display device for an electronic timepiece provided with time indicating hands, said liquid crystal display device having an annular configuration and comprising a plurality of display elements arranged in an annular arrangement, with said time indicating hands to be disposed within a central aperture of said liquid crystal display device, said liquid crystal display device comprising:

first and second annular transparent substrates;

an outer layer-of sealant material disposed between said first and second transparent substrates adjacent to the outer periphery thereof, and an inner layer of sealant material disposed between said first and second transparent substrates adjacent to the inner periphery thereof to thereby form an annular chamber between said first and second transparent substrates; a layer of liquid crystal material provided within said annular chamber between said first and second transparent substrates;

a plurality of segment electrodes formed on an inner surface of said first transparent substrate; and first and second common electrodes formed on an inner surface of said second transparent substrate, each of said common electrodes comprising a plurality of electrically interconnected common electrode portions, with the common electrode portions of said first and second common electrodes being arranged in a successively alternating manner around said second transparent substrate, said common electrodes being operable in conjunction with a first set of said segment electrodes for defining said plurality of display elements arranged in an annular configuration.

4,435,047

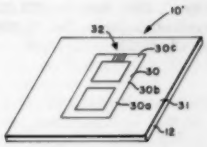
ENCAPSULATED LIQUID CRYSTAL AND METHOD

James L. Fergason, Kent, Ohio, assignor to Manchester R & D Partnership, Pepper Pike, Ohio

Filed Sep. 16, 1981, Ser. No. 302,780

Int. Cl.³ G02F 1/13

U.S. Cl. 350—334 **111 Claims**



1. A liquid crystal apparatus, comprising liquid crystal material having positive dielectric anisotropy, and surface means for affecting the natural structure of said liquid crystal material to induce a distorted alignment thereof in the absence of an electric field to reduce optical transmission independent of polarization, said liquid crystal material being responsive to the presence of an electric field to increase such optical transmission.

12. A method of making encapsulated nematic liquid crystals, comprising mixing at least an encapsulating medium and a nematic liquid crystal material, and further comprising selecting such liquid crystal material and such encapsulating medium such that the liquid crystal material has an ordinary index of refraction substantially the same as the index of refraction of the encapsulating medium.

29. Liquid crystal apparatus, comprising liquid crystal material, and containment means for inducing a distorted alignment of said liquid crystal material which in response to such alignment at least one of scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption.

60. Liquid crystal material and a medium for containing discrete quantities of said liquid crystal material, said liquid crystal material having positive dielectric anisotropy, and wherein when exposed to an electric field the electrical impedance of said medium and liquid crystal material exposed to such field along an electrical path through both said medium and liquid crystal material are related such that the electrical impedance of said medium is less than the electrical impedance of said liquid crystal material exposed to such field.

62. Liquid crystal material and a medium for containing discrete quantities of such liquid crystal material, said material having positive dielectric anisotropy, and mixed with the liquid crystal material a pleochroic dye that is soluble in the liquid crystal material.

4,435,048

ELECTRO-OPTICAL DEVICE AND ELECTRO-OPTICAL LIGHT CONTROLLING DEVICE

Tadatoshi Kamimori, Tokyo; Mamoru Mizuhashi, and Junichi Nagai, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,104

Claims priority, application Japan, Apr. 15, 1980, 55-48657; Apr. 18, 1980, 55-50324; Nov. 6, 1980, 55-155213

Int. Cl.³ H01G 9/00; G02F 1/17

U.S. Cl. 350—357 9 Claims

1. An electro-optical device comprising non-solid electrolyte layer held between a pair of electrodes and a solid electrochromic material placed on at least one of said electrodes, said electrolyte layer comprising an organic material and a chelating agent, wherein said electrolyte layer further comprises iodine or an iodine compound selected from the group consisting of metal or ammonium iodides, C_1–C_4 iodine-containing carboxylic acids, C_1–C_4 alkyl iodides and chromatic iodo compounds, in an amount of from 5×10^{-3} mole/liter up to saturation level.

4,435,049

TELEPHOTO LENS SYSTEM

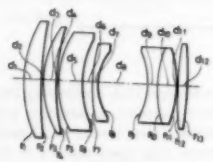
Yoshiaki Horikawa, and Toshihiro Imai, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,393

Claims priority, application Japan, Dec. 8, 1980, 55-172099

Int. Cl.³ G02B 9/62, 13/02

U.S. Cl. 350—454 8 Claims



1. A telephoto lens system comprising: first, second and third positive meniscus lens components, each having the convex surface on the object side; a fourth negative meniscus lens component having the convex surface on the object side; a fifth positive cemented meniscus lens component having the convex surface on the image side; and, a sixth positive lens component; said lens system satisfying the following conditions

$$1.6<f_{1234}/f<2.3 \quad (1)$$

$$n_1>1.6,\ n_3>1.6 \quad (2)$$

$$\nu_2<60 \quad (3)$$

$$0.6<f_{B123}/r_6<1.0 \quad (4)$$

$$0.08f<d_5<0.12f \quad (5)$$

$$0.09f<d_9+d_{10}<0.15f \quad (6)$$

wherein the reference symbol f represents the focal length of the entire lens system, the reference symbol f_{1234} represents the composite focal length of the first lens component to the fourth lens component, the reference symbol f_{B123} represents the back focus of the first lens component to the third lens component, the reference symbols n_1 and n_3 respectively represent refractive indices of the first lens component and the third lens component, the reference symbol μ_2 represents the Abbe's number of the second lens component, the reference symbol r_6 represents the radius of curvature of the third lens component, and the reference symbols d_5, d_9 and d_{10} respectively represent thicknesses of respective lenses forming the third lens component and the fifth lens component.

4,435,050

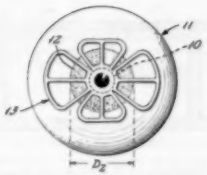
CONTACT LENS ASSEMBLY WITH HAPTIC AND METHOD FOR MAKING THE SAME

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Continuation-in-part of Ser. No. 124,941, Feb. 26, 1980, Pat. No. 4,377,329. This application Jan. 15, 1981, Ser. No. 225,349

Int. Cl.³ A61F 1/16; G02C 7/04

U.S. Cl. 351—160 R 31 Claims



1. A contact lens assembly adapted for removable mounting to the cornea of an eye, comprising an optically finished lens element having a circular periphery characterized by a convex outer surface having a circumferentially continuous peripheral-edge rabbet formation in the outer-surface side of said element, and a single-piece haptic of flexible sheet material having a central circular opening at the rim of which said haptic has circumferentially continuous seated engagement with said rabbet formation and thereby mounts said lens element, said haptic being so axially compliant as to conform to the curvature of the cornea and to be self-adherent thereto via surface moisture of the cornea, whereby the self-adherent force upon haptic contact with the cornea is operative at the periphery of said lens element to axially inwardly retain the inner surface of the lens element in contact with the cornea.

4,435,051

WORKING DISTANCE DETECTING DEVICE FOR OPHTHALMIC APPARATUS

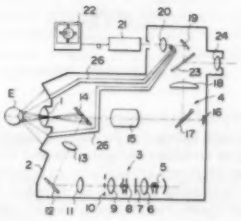
Kazuo Nunokawa, Itabashi, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Jun. 3, 1981, Ser. No. 269,670

Claims priority, application Japan, Jun. 10, 1980, 55-77935

Int. Cl.³ A61B 3/14; G03B 29/00

U.S. Cl. 351—208 5 Claims



1. An ophthlamic apparatus which comprises objective lens means adapted to be located opposite an eye to be examined with a working distance therebetween, an illuminating optical system having a ring-shaped aperture located substantially conjugate to the cornea of the eye with respect to the objective lens means so that a beam of illuminating light is projected on the eye through said aperture and said objective lens means, a working distance detecting device which comprises at least one light-shading opaque portion provided in said aperture and having a width in a circumferential direction and light-receiving means provided outside the perimeter of said objective lens means at a position capable of receiving a projection of said

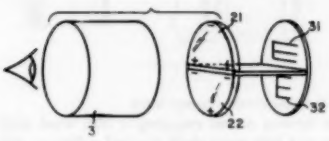
light-shading opaque portion of the ring-shaped aperture by the illuminating beam reflected at the cornea of the eye to be examined, whereby the working distance between the objective lens means and the cornea of the eye is detected based on the width of the projection of the light-shading opaque portion onto said light-receiving means.

4,435,052

OPHTHALMIC TEST APPARATUS HAVING MAGNIFICATION COMPENSATION

David L. Guyton, 307 Somerset Rd., Baltimore, Md. 21210

Filed Oct. 31, 1980, Ser. No. 202,521
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—239 **1 Claim**



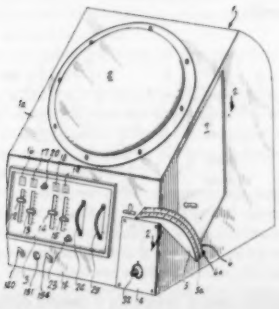
1. Ophthalmic test apparatus comprising a plurality of similar test targets presented simultaneously to a patient's eye, with at least one of said test targets having associated optical means for varying the trial refractive correction through which said one test target is viewed by said eye, whereby said patient may choose from a plurality of trial refractive corrections, wherein the improvement comprises two test targets simultaneously presented, each of said test targets having associated optical means to vary the respective trial refractive correction to produce opposite cross-cylinder effect for said two test targets, said test targets having meridional magnification difference which compensates for the astigmatic magnification difference produced by said optical means.

4,435,053

THREE-DIMENSIONAL PLURAL DISPLAY APPARATUS

Edward A. Woloshuk, New York, N.Y., and Gregory J. Walz, Pittsburgh, Pa., assignors to The Zyntrax Corporation, Montauk, N.Y.

PCT No. PCT/US82/01370, § 371 Date Jun. 16, 1982, § 102(e) Date Jun. 16, 1982, PCT Pub. No. WO82/01259, PCT Pub. Date Apr. 15, 1982
PCT Filed Oct. 8, 1980, Ser. No. 437,101
Int. Cl.³ G03B *21/32*
U.S. Cl. 352—86 **14 Claims**



1. Apparatus for forming and sequentially displaying in the same space at least two different three-dimensional images, comprising:

a. intermittently operable illuminating means;

b. an optical system defining an optical path extending from said illuminating means;

c. means supporting an array of photographs and operable to move said photographs successively through said optical path at a rate sufficiently greater than the human persistence of vision so that the array moves through the path within the period of perisistence of vision;

d. means for operating said illuminating means only when one of the photographs is aligned with said path;

e. a projection screen circumscribing an axis about which the screen is rotatable, said screen being curved eccentrically with respect to the axis and intercepting said optical path, the curvature of the screen being effective to move the screen along the optical path toward and away from the photographs as the screen rotates;

f. means synchronizing the rotation of the screen with the operation of the illuminating means and the movement of the photograph supporting means to project on the screen a series of images which appear to an observer having persistence of vision to be a three-dimensional image;

wherein the improvement comprises:

g. at least two series of two-dimensional photographs in said array, each series showing successive sections of one of said images, the photographs of each series being arranged in said array in a predetermined order corresponding to the relationship that said successive sections bear to each other, the photographs of each series being located in said array in positions different from the locations of the photographs of the other series; and

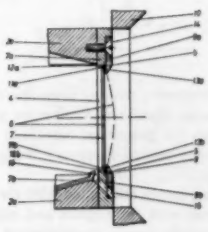
h. selection means for controlling said illuminating means to illuminate the photographs of only one of said series during one movement of said array through said optical path, and to illuminate the photographs of only another of said series during a subsequent movement of said array through said optical path.

4,435,054

FILM GUIDE ASSEMBLY

Hellmut Schrader, Am Hüttenkrug 12, D-3057 Neustadt 1, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,972
Int. Cl.³ G03B *21/16*
U.S. Cl. 353—95 **8 Claims**



1. In a film guide assembly for a film viewing device which projects an image provided on a film having parallel edges, the assembly comprising means for defining a film transporting path having a window disposed therein for the delimitation of the edges of the image on the film and for defining the position of the film, the width of the opening of the window transverse to the direction of the film transporting path being smaller than the width of the film transporting path, and means disposed in the viewing device for directing light through the window, the improvement wherein said film guide assembly further comprises first and second frame members which are arranged one behind the other in the direction of the travel of light through said window and enclose between them said film transporting

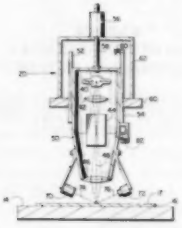
path, said first frame member being located to contact the edges of the film and defining a contact plane which comprises the window plane determinative for the sharpness of the projected image, said second frame member having first and second projecting parts each disposed to extend along a respective one of the edges of the film, delimiting the corresponding edges of said second frame member, projecting in the direction of said contact plane defined by said first frame member and located for pushing the film toward said contact plane across the entire extent of said window in the direction of said transporting path, said first and second frame members defining an opening having at least one dimension at least equal to the corresponding dimension of the film area utilized for projection of the image, and the opening width transverse to the direction of film transporting of said first frame member being greater than the corresponding opening width of said second frame member.

4,435,055

MULTIPLE FREQUENCY RANGING APPARATUS FOR FOCUS CONTROL

Henry F. Berdat, Manchester, and Kerry D. Baines, Vernon, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Aug. 12, 1981, Ser. No. 292,220
Int. Cl.³ G03B *13/20*
U.S. Cl. 354—4 **25 Claims**



1. A multiple frequency ranging apparatus for measuring the distance between an object and a reference plane comprising:

oscillator means for generating signals at first and second frequencies, the second frequency being higher than the first frequency;

wave generating means connected with the oscillator means and associated with the objects and reference plane for producing energy waves characterized by the first and second frequencies and transmitting the waves between the object and the reference plane;

wave receiving means associated with generating means for receiving the waves transmitted by the generating means between the object and the reference plane;

detecting means having an input connected with the receiving means for detecting from the waves the distance between the object and the plane at the first frequency and the second frequency; and

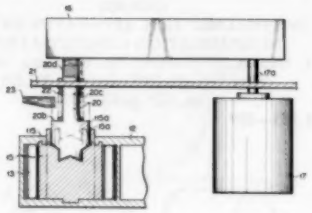
control means associated with the detecting means for switching the detection of the distance between the object and the plane from the first frequency for coarse detection to the second frequency for fine detection.

4,435,056

FILM FEEDING DEVICE

Kowji Tanikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,515
Claims priority, application Japan, Dec. 26, 1980, 55-185947
Int. Cl.³ G03B *7/00*
U.S. Cl. 354—21 **12 Claims**



1. A film feeding device comprising:

film wind driving means engaging a film wind shaft and rotating said film wind shaft to wind a film on said film wind shaft;

shaft diameter information producing means for producing information representing the diameter of said film wind shaft with said film wound thereon;

means for updating the shaft diameter information from said shaft diameter information producing means every time a given length of the film is wound on said film wind shaft;

means for deciding the rotation angle of said film wind shaft and producing a rotation angle information in accordance with the shaft diameter information from said shaft diameter information producing means; and

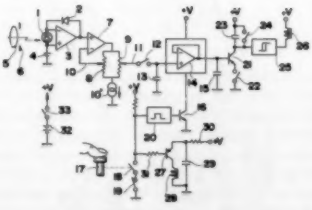
means for driving said film wind driving means in accordance with the rotation angle information from said rotation angle information producing means, whereby said film wind shaft is rotated through an angle corresponding to said rotation angle information.

4,435,057

EXPOSURE CONTROL DEVICE FOR CAMERAS

Masaaki Nakai, Osaka, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP81/00275, § 371 Date Jun. 14, 1982, § 102(e) Date Jun. 14, 1982, PCT Pub. No. WO82/01424, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 9, 1981, Ser. No. 395,079
Claims priority, application Japan, Oct. 13, 1980, 55-142565
Int. Cl.³ G03B *7/083*
U.S. Cl. 354—426 **5 Claims**



1. An exposure control device for a camera comprising:

a light measuring circuit for measuring the brightness of an object to be photographed and producing an output signal

for the exposure control in accordance with the measured value;

an AE-lock switch manually operable independently of the camera release operation;

a first storage capacitor connected through the AE-lock switch to the light measuring circuit;

a buffer circuit activated for a given period in conjunction with a camera shutter release operation and having high input and output impedances when the buffer circuit is deactivated;

a second storage capacitor connected through the buffer circuit to the first storage capacitor; and

a control circuit for controlling camera exposure in accordance with the charged voltage of the second storage capacitor, said buffer circuit charging the second storage capacitor to a potential equal to that of the first storage capacitor.

4,435,058

AUTO-FOCUS CONTROL CAMERA

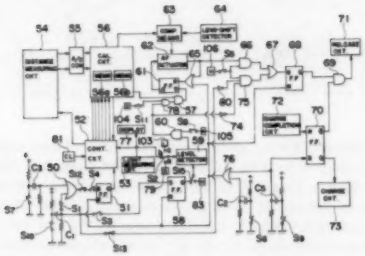
Fumio Yoshida, Osaka; Yukio Miki, Sakai; Takeshi Egawa, and Akira Yoshizaki, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 17, 1982, Ser. No. 349,469

Claims priority, application Japan, Feb. 27, 1981, 56-29110; Mar. 5, 1981, 56-32262; Mar. 5, 1981, 56-32263; Mar. 5, 1981, 56-32264; Mar. 5, 1981, 56-32265

Int. Cl.³ G03B *3/10, 1/00*

U.S. Cl. 354—403 **30 Claims**



1. Auto-focus control camera comprising:

means for photoelectrically obtaining information for auto-focus adjustment, said obtaining means being of a type in which the time taken to complete the information depends on the scene brightness;

means for adjusting the focus of the camera in accordance with said information;

means for effecting the film winding-up operation;

means for detecting that the time taken for said obtaining means to complete the information is greater than a predetermined period, to disable the focus adjustment by said adjusting means; and

means for causing the camera exposure in response to the completion of the focus adjustment and the completion of the film winding-up operation when the time greater than the predetermined period is not detected by said detecting means, and in response to the detection by said detecting means and the completion of the film winding-up operation when the time greater than the predetermined period is detected by said detecting means.

4,435,059

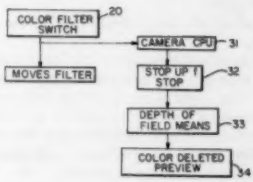
CAMERA WITH AUTOMATIC APERTURE SETTING AND PARTIALLY COLOR DELETED VIEWFINDER SELECTION

Jeremy Gerber, 7 Frog Rock Rd., Armonk, N.Y. 10504

Filed Sep. 30, 1982, Ser. No. 431,053

Int. Cl.³ G03B *7/095, 13/02*

U.S. Cl. 354—453 **6 Claims**



1. In a camera having a variable diaphragm and a shutter, means to automatically determine the proper taking aperture of said diaphrogm for photographing a scene, means to close down the diaphragm to the determined aperture without operation of the shutter, a taking lens and an eyepiece viewfinder viewing the scene through an optical path through the taking lens and the diaphragm; characterized in having a system to provide a partially color deleted view of the scene through the eyepiece viewfinder, said system including means, selectively under operator control, to position a color filter in the optical path of the viewfinder, means automatically upon said selection to determine the said taking aperature and compensate for said filter, the compensation permitting sufficient light to compensate for said filter, and means to close down said variable diaphragm to said compensated aperture without operating the shutter, to thereby present a partially color-deleted view to said viewfinder.

4,435,060

AUTOMATIC FILM WIND-UP CAMERA

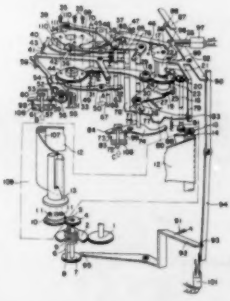
Takumi Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 346,768

Claims priority, application Japan, Feb. 6, 1981, 56-15619

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173.1 **5 Claims**



1. An automatic film wind-up having a camera body provided with a film wind-up mechanism, a shutter charging mechanism, a shutter front curtain and a shutter back curtain interlocked with the shutter charging mechanism to travel when the shutter is released, a wind-up signalling member which is actuated upon completion of travel of the shutter back curtain, a film frame indexing mechanism, a counter for count-

ing the number of exposed frames and an automatic film wind-up drive motor for driving said film wind-up mechanism and said shutter charging mechanism and capable of attaching removably three types of film backs formed with a means for signalling attachment of the respective films of roll film No. 120, roll film No. 220 and 70 mm film, characterized in that said camera body is provided with

a film take-up control member for controlling automatic leading end feed and automatic take-up corresponding to the number of respective exposed frames of said three types of films,

a ratchet wheel pivoting integrally with the take-up control member,

a first film controlling member interlocked with said take-up control member to control the roll film No. 120,

a second film controlling member interlocked with said take-up control member to control the roll film No. 220,

a holder member interlocked with said first and second film controlling members to maintain said automatic wind-up drive motor at wind-up condition,

a wind-up operative member regulated by the holder member and said film frame indexing mechanism,

a wind-up switch interlocked with the wind-up operative member to start and stop said automatic wind-up drive motor,

a film start signalling member which is actuated when the wind-up switch is turned on to start the wind-up of film,

a reset switch interlocked with the film start signalling member for allowing the exposure counter to count the exposed frames when the reset switch is held in a prescribed state,

a feed member interlocked with said film indexing mechahism to move intermittently said take-up control member,

first and second stop members interlocked with said feed member to block return of said take-up control member,

first, second and third signalling members for detecting the type of film from the film back when any one of said three types of film backs is attached to said camera body and

first, second and third releasing members interlocked with the signalling members to release said stop members.

4,435,061

ELECTRIC MOTOR DRIVE DEVICE FOR CAMERA

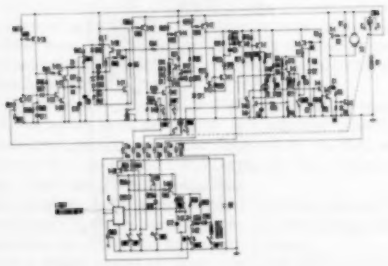
Hidehiko Fukahori, Kanagawa; Toshikazu Ichiyanagi; Tomonori Iwashita, both of Tokyo; Yukio Mashimo, Kanagawa; Akio Sunouchi, and Masahisa Fujino, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,339

Claims priority, application Japan, Jun. 11, 1981, 56-90031

Int. Cl.³ G03B *1/18*

U.S. Cl. 354—173.11 **8 Claims**



1. An electric motor driven camera comprising:

driving means for winding film inserted in the camera;

control means arranged to stop said driving means upon completion of winding and to allow the driving means to perform a driving action upon completion of an exposure action;

stopping means arranged to bring the driving action to a stop after completion of photographing of all film frames;

detection means for detecting completion of film rewinding, said detection means being arranged to generate a detection signal when completion of film rewinding is detected; and

release means which releases said stopping means from the stopping action thereof in response to the detection signal from said detection means, said release means being arranged to operate the driving means until completion of winding by releasing the stopping means from the stopping action thereof.

4,435,062

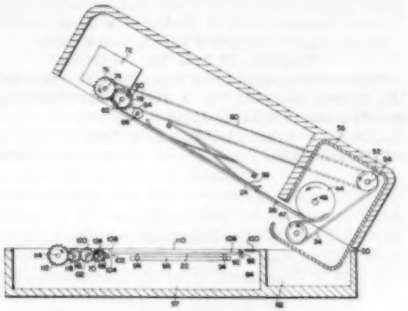
FILM PROCESSING APPARATUS

Vincent L. Cocco, Wakefield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 27, 1982, Ser. No. 453,801

Int. Cl.³ G03D *5/06*

U.S. Cl. 354—303 **18 Claims**



1. A film processing apparatus for use with a liquid applicator packaging web of the type including an elongated flexible carrier sheet, a plurality of liquid applicator pads secured to one side of the carrier sheet in spaced-apart relation along its length and each yieldably holding a supply of a low viscosity processing liquid adapted to be applied to an outer surface of a sheet-like photosensitive film unit to initiate processing thereof, and an elongated flexible cover sheet superposed with the carrier sheet in covering relation to the applicator pads, the carrier and cover sheets being selectively releasably sealed together in facing areas thereof surrounding each of the applicator pads to form a plurality of serially connected containers on the web, each enclosing a corresponding one of the applicator pads therein, said film processing apparatus comprising:

means for supporting such a film unit;

means for supporting such a liquid applicator packaging web;

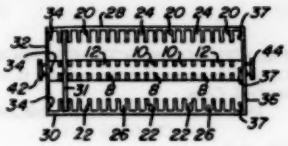
means for advancing the web relative to said web support means in predetermined increments to separate the cover sheet from the carrier sheet and successively unseal and open each of the containers and locate the corresponding uncovered applicator pad therein at a processing position; and

means for bringing an uncovered applicator pad located at said processing position into liquid-yielding contact with the outer surface of the film unit to apply the liquid thereto to initiate processing of the film unit.

4,435,063
AUTORADIOGRAPHY METHOD USING A SLIDE RACK

Nurten N. Gunduz, and Dincer H. Gunduz, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 15, 1980, Ser. No. 216,295
Int. Cl.[3] G03D *13/08*
U.S. Cl. 354—315 7 Claims

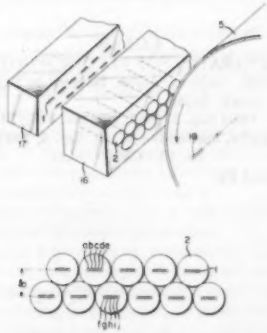


1. A method of processing specimens comprising
securing said specimens to a plurality of slide members,
providing rack means having separators defining a plurality of slide-receiving slots,
introducing said slides into said slots,
immersing said slides while in said rack in a bath of photographic emulsion,
removing said rack from said bath,
exposing said emulsion-covered slides to radiation while said slides are in said rack,
developing said exposed slides, and
removing said developed slides from said rack, whereby said specimen-bearing slides will be coated with emulsion, exposed and developed without the need for individual handling of said slides after initial introduction of said slides into said rack.

4,435,064
OPTICAL EXPOSURE UNIT FOR ELECTROPHOTOGRAPHIC PRINTING DEVICE

Toshiji Tsukada, and Kazuo Morinaga, both of Kanagawa, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 277,040
Claims priority, application Japan, Jun. 28, 1980, 55-88371
Int. Cl.[3] G03B *27/00*; G03G *15/00*
U.S. Cl. 355—1 8 Claims

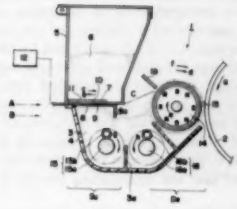


8. In an electrophotographic printing device of the type in which electrostatic latent images of characters and the like are formed on the surface of a photosensitive medium, an exposure unit comprising:
a first assembly of a plurality of light-beam transmission-and-convergence means whose one ends are disposed in opposed relationships with said surface of said photosensitive medium;
a second assembly of a corresponding plurality of light-emitting diodes whose light-emitting apertures are disposed in opposed relationships with the other ends of the light-beam transmission-and-convergence means; and
means for displacing at least one of said first and second assemblies toward or away from the surface of said photosensitive medium by an extremely small distance, said displacing means comprising at least one piezoelectric element interposed between a stationary assembly supporting means and said second assembly or between said second assembly and said first assembly.

4,435,065
ELECTROGRAPHIC DEVELOPING APPARATUS WITH TONER FLOW DIRECTOR

Kenichi Wada, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1982, Ser. No. 356,646
Claims priority, application Japan, Mar. 31, 1981, 56-48683
Int. Cl.[3] G03G *15/08, 15/09*
U.S. Cl. 355—3 DD 8 Claims



1. An electrographic developing apparatus which comprises:
a developer container having means dividing it into a toner supply section and a developing section and adapted to be normally substantially filled with a powder developer in the form of a mixture of a carrier and a toner;
means adjacent the developing section for developing latent electrostatic images on an image bearing member by the use of the developer contained in the developing section of the container;
a toner tank above said toner supply section and adapted to contain a supply of toner therein and having a bottom adapted to be contacted by the developer contained in the toner supply section of the container, said bottom having a toner passing aperture therein;
a movable member movable along said bottom for opening and closing the toner passing aperture;
means connected to said movable member for moving said movable member to open the toner passing aperture when toner is to be supplied and for holding the movable member in an aperture closing position when no toner is to be supplied; and
developer moving means for, when the level of said developer is sufficiently high, physically contacting and forcibly moving a portion of the developer from the developing section of the container into the toner supply section during a time at least when said movable member is moved to the position where the toner passing aperture is open and the toner is being supplied for raising the level of the top of the developer contained in the supply section of the container relative to the level of the top of the developer in the developing section.

4,435,066

ION MODULATING ELECTRODE WITH IMPROVED TRANSMISSION FACTOR

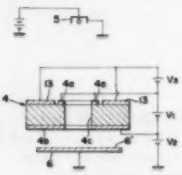
Noriyoshi Tarumi, Hachioji; Haruo Iwahashi, Fussa; Masahiko Matsunawa, and Hiroshi Tokunaga, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 355,878

Claims priority, application Japan, Mar. 16, 1981, 56-36489; Mar. 16, 1981, 56-36490; Mar. 16, 1981, 56-36491

Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 SC 4 Claims



1. An electrostatic reproducing apparatus comprising an ion generator, an ion modulating electrode constructed of a continuous layer of conductive material and a segmented layer of conductive material with an insulating layer sandwiched in between, and having a plurality of apertures so that the flow rate of the ions which are generated by said ion generator and allowed to pass through said apertures may be controlled by a picture image signal to be recorded, recording means for receiving the ions which have passed through said apertures, and means for enhancing the ion transmission factor of said apertures, said enhancing means generating an electric field of at least 0.5 KV/mm between the segmented layer of conductive material of said ion modulating electrode and said recording means.

4,435,067

METHOD AND APPARATUS FOR TRANSFERRING AND FIXING POWDER IMAGES

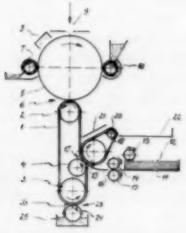
Willem T. Draai, Bierick; Jozef J. A. Pleyers, Baarlo, and Nicolaas P. J. Kuin, Grubbenvorst, all of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Aug. 11, 1982, Ser. No. 407,127

Claims priority, application Netherlands, Aug. 19, 1981, 8103867

Int. Cl.³ G03G 15/16, 15/20

U.S. Cl. 355—3 TR 8 Claims



1. A method of transferring and fixing powder images onto receiving supports such as of paper, which comprises transporting through a treatment zone, on a moving, resiliently deformable, hydrophobic support surface, a powder image formed of water-absorbent particles that soften on absorbing water; in said zone covering the hydrophobic support surface and the powder image on said surface with water and directly afterward squeegeeing water from said surface and the image thereon; and thereafter contacting the moistened powder image on the support surface with a said receiving support under pressure, thereby transferring and fixing the powder image in moist and softened state onto the receiving support.

4,435,068

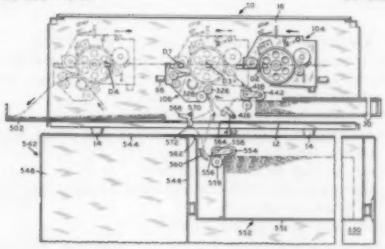
APPARATUS FOR ELECTROPHOTOGRAPHY

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Filed May 29, 1981, Ser. No. 268,261

Int. Cl.³ G03G 15/14

U.S. Cl. 355—3 R 10 Claims



1. Electrophotographic apparatus for producing a copy of a document on a sheet from a sheet supply location and for delivering said copy at a location remote from said supply location including in combination, means for moving a sheet from said supply location to said delivery location, and electrophotographic means for producing the initial portion of said copy in the course of movement of said sheet from said supply location to said delivery location and the terminal portion of said copy with the leading edge of said sheet stopped at said delivery location.

4,435,069

FIXING APPARATUS FOR ELECTROPHOTOGRAPHY

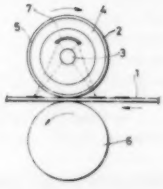
Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Asaka, Japan

Filed Sep. 3, 1982, Ser. No. 414,723

Claims priority, application Japan, Sep. 4, 1981, 56-138378

Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 FU 8 Claims

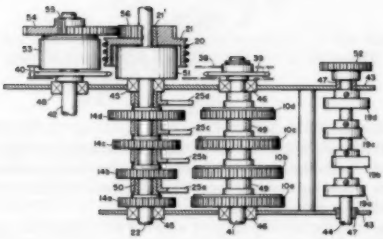


1. A fixing apparatus for use in electrophotography comprising; a fixing drum including an infrared radiation heat source in the interior thereof, said fixing drum being made of a transparent material permeable to infrared radiation and having an outer layer of a material which absorbs part of the infrared radiation.

4,435,070
VARIABLE MAGNIFICATION COPYING APPARATUS

Tadayuki Kitajima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 318,986, Nov. 6, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 428,271
Claims priority, application Japan, Nov. 10, 1980, 55-157953
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—8 23 Claims



1. A variable magnification copying apparatus capable of copying originals at least first and second different copying magnifications, including:

original scanning means for scanning an original to be copied;

a photosensitive medium on which is formed the optical image of the original scanned by said original scanning means;

means for changing the magnification of the optical image of the original formed on said photosensitive medium correspondingly to a selected copying magnification;

velocity ratio changing means for changing the ratio of the original scanning velocity of said scanning means to the movement velocity of said photosensitive medium correspondingly to the selected copying magnification, said velocity ratio changing means including:

a first shaft connected to a drive source;

a second shaft connected to one of said original scanning means and said photosensitive medium;

first and second gear means provided on said first shaft;

third and fourth gear means provided on said second shaft;

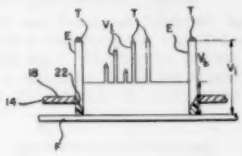
displaceable fifth gear means adapted, correspondingly to said first copying magnification, to mesh with both said first gear means and said third gear means to transmit the rotational force of said first shaft to said second shaft, and adapted, correspondingly to said second copying magnification, to be disengaged from at least one of said first gear means and said third gear means; and

displaceable sixth gear means adapted, correspondingly to said second copying magnification, to mesh with both said second gear means and said fourth gear means to transmit the rotational force of said first shaft to said second shaft, and adapted, during the copying at said first copying magnification, to be disengaged from at least one of said second gear means and said fourth gear means.

4,435,071
METHOD AND MEANS FOR REDUCING FRAME EFFECT IN ELECTROGRAPHIC IMAGES ON MICROFICHE

Manfred R. Kuehnle, 6 Linmoor Ter., Lexington, Mass. 02173

Continuation of Ser. No. 941,658, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 716,591, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 646,004, Jan. 2, 1976, abandoned, which is a continuation of Ser. No. 481,133, Jun. 20, 1974, abandoned. This application Mar. 23, 1981, Ser. No. 246,811
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 13 Claims



1. An electrographic recording system comprising:

A. means for impressing an electrostatic charge on the frame area of an electrographic storage medium;

B. means for exposing an image area within said frame area to a light image of an original so that the image area is smaller than the frame area, thereby forming a non-illuminated, charged boundary around the image area, said exposing means comprising a non-electrically conductive ring extending opposite said boundary, said ring

(1.) establishing the focal plane of the exposing means,

(2.) providing a seal against toner particles around the edge of the frame area, and

(3.) masking the storage medium along said boundary from incident light; and

C. means for directing toner particles along the surface of the medium with an appreciable velocity so that their momentums across the medium surface inhibit their tendency to be captured by the residual charge on fully exposed portions of the medium whereby they collect at the unexposed or only partially exposed portions of the image area and at said charged boundary so as to improve the quality of the image on the medium while simultaneously forming a sharp, distinct, uniform dark border around and touching the image area on the medium.

4,435,072
IMAGE RECORDING APPARATUS WITH LEAKAGE PREVENTING MICROWAVE FIXING DEVICE

Hiroyuki Adachi, Tokyo, and Nagao Hosono, Chofu, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,686
Claims priority, application Japan, Dec. 11, 1980, 55-174898; Dec. 11, 1980, 55-174899; Dec. 11, 1980, 55-174902
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU 48 Claims

1. An image recording apparatus comprising

an outer casing;

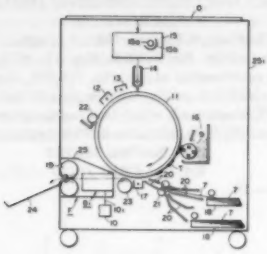
an image formation station for causing a recording medium to bear a visualized image;

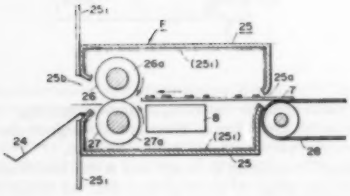
a fixing station for applying high-frequency waves to thereby fix the visualized image on the recording medium thereby to record the image;

means for conveying the recording medium along a conveyance path from said image formation station until the recording medium passes through said fixing station;

first means for preventing the high-frequency waves from

leaking out of said casing of said image recording apparatus; and





second means provided in said casing for preventing the high-frequency waves from leaking out of the fixing station into said image recording apparatus.

4,435,073

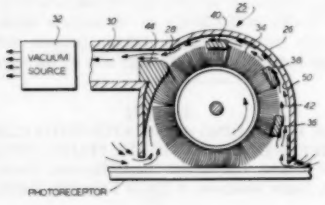
TONER REMOVAL APPARATUS

Richard L. Miller, Burnsville, Minn., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1982, Ser. No. 408,341

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—15 **11 Claims**



1. Apparatus for removing toner particles from a charge retentive surface, said apparatus comprising:

a cylindrical brush adapted for rotation in contact with said surface;

first means for interfering with the rotation of said brush to thereby cause fibers of said brush to flex and simultaneously electrostatically charge said brush to a first polarity;

second means for interfering with the rotation of said brush to thereby cause fibers of said brush to flex and simultaneously electrostatically charge said brush to a second polarity; and

means for creating an airstream across said first and second means whereby said the charge on said fibers is reversed while said fibers are in the airstream.

4,435,074

CLEANING APPARATUS FOR ELECTROPHOTOGRAPHY COMPRISING LUBRICANT FILM APPLICATOR MEANS

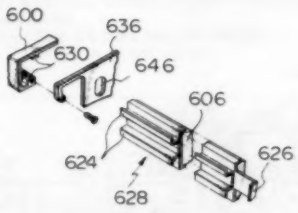
Akira Midorikawa; Kenji Kojima, and Kazuo Uchimura, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,190

Claims priority, application Japan, Apr. 23, 1980, 55-53790

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **11 Claims**



1. A cleaning apparatus for an electrophotographic copying machine including a photosensitive member, the cleaning apparatus removing residual toner particles from the photosensitive member and comprising;

scraper blade means engaging with the photosensitive member to scrapingly remove residual toner particles therefrom:

applicator means for applying a film-forming material onto the circumference of the photosensitive member; and

drive means for moving the applicator means into and out of contact with the photosensitive member in dependence on a parameter indicating a varying operating condition of the photosensitive member;

whereby a proper amount of the film-forming material is applied onto the circumference of the photosensitive member under a varying operating condition of the photosensitive member; and

sensor means for sensing a coefficient of friction of the circumference of the photosensitive member, the parameter comprising the sensed coefficient of friction of the circumference of the photosensitive member.

4,435,075

COLOR COPIER

Bernd Payrhammer, Munich, and Volker Weinert, Taufkirchen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,111

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106124

Int. Cl.³ G03B *27/72, 27/76*

U.S. Cl. 355—35 **14 Claims**

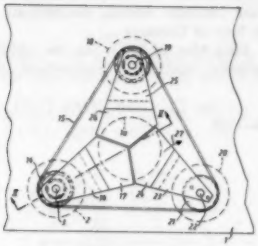
1. A color copier, particularly a photographic color copier, comprising:

(a) a plurality of overlapping color filters for adjusting the color composition of the copying light, each of said filters including a plurality of filter sections, and the sections of each filter being rotatable to and from predetermined positions in which said sections project into the path of the copying light;

(b) connecting means for each filter connecting the sections thereof for rotation in unison; and

(c) drive means for each filter operative to rotate said sections to and from said predetermined positions, each of said drive means including a rotatable shaft, and one of the

sections of one of said filters being mounted on the corresponding shaft for rotation therewith, said one filter having another section which is mounted on the shaft of another filter and is rotatable relative to such shaft.

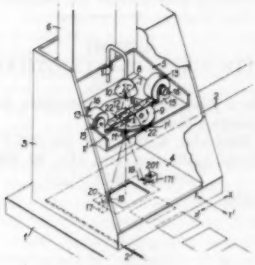


4,435,076

PROJECTED IMAGE POSITIONING METHOD AND APPARATUS FOR PHOTOGRAPHIC ENLARGER

Masuda Tatsunosuke, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 142,220, Apr. 21, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,674
Claims priority, application Japan, May 10, 1979, 54-58305
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—41 **1 Claim**



1. Positioning apparatus for a photographic enlarger including a film holder, means for adjustably supporting said film holder in a selected position with respect to a sensitized material surface, said apparatus usable with a film containing at least one frame and having two register marks located at selected positions adjacent opposite sides of said frame and outside the image area of said frame, said enlarger having means for projecting said frame and said register marks toward said surface, comprising:

at least two mirrors, each one positioned in the path of the projected image of one said mark, for diverting the projected image of said mark away from said surface;

at least two sensors, one associated with each mirror, each comprising a receiver element having at least two electrically independent sections arranged symmetrically, and arranged to receive the respective diverted image of a register mark;

means for mounting said sensors at the optical equivalent of the focal plane of the projected image of said register mark on said sensitized material surface when said film is in a position to project the image of said frame onto a desired frame location on said surface;

means associated with said sensors for developing signals representative of the position of said projected register marks on said sensors and therefore of the position and orientation, relative to said sensitized material surface, of said enlarged projected image of said register marks; and

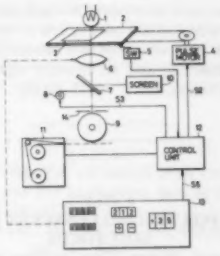
means for adjusting the position and orientation of said holder comprising a feedback circuit connected to the sensors and adapted to activate at least one pulse motor for causing movement of the film holder rotationally about its center and rectilinearly in two perpendicular directions in the plane of the holder in response to said signals from said sensors to move said projected image to said desired frame location.

4,435,077

OPTICAL MAGNIFICATION ENLARGEMENT TYPE COPYING MACHINE

Kazuhiro Suzuki, and Toshikatsu Takahashi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,961
Claims priority, application Japan, Jul. 8, 1981, 56-106398
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **9 Claims**



1. A magnification enlargement copying wherein an image of a picture on a film projected from observation and copying comprising:

control means having an input section for receiving data on the size of said film, the size of a sheet on which an enlarged image will be copied and the amount of magnification of said image;

positioning means receiving said film and moving it from an observation position to a film scanning start position;

optical means for magnifying said film or a portion thereof and projecting it for observation and copying;

arithmetic means associated with said control means for determining a distance between said observation position and a scanning start position from a size of a picture on said film and calculating film scanning speed from a magnification from said optical means to control said positioning means; and

copying means responsive to an image projected by said optical means and controlled by said control means.

4,435,078

ELECTRONIC LIGHT BEAM TESTER

Louis F. de Brabander, Wezembeek-Oppem, and Luc K. Van Linthout, Leuven, both of Belgium, assignors to Fonds d'Etudes pour la Securite Routiere A.s.b.l., Brussels, Belgium

Filed Jun. 22, 1981, Ser. No. 276,183
Claims priority, application Belgium, Jun. 27, 1980, 201.209
Int. Cl.³ G01V *1/42*
U.S. Cl. 356—121 **10 Claims**

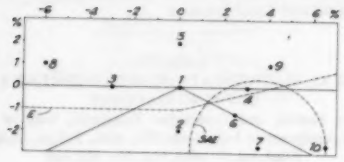
1. A device for checking the orientation and luminous intensities of a light beam comprising, in combination:

a screen having a set of photocell transducers spaced apart from each other in selected lateral directions, the transducers arranged to produce individual output electrical signals representative of the intensity of light striking the

respective transucers, and including means for orienting the screen relative to a reference direction;

means for processing at least selected ones of said transducer signals to obtain a product signal representative of said selected transducer signals multiplied by a calibrated (constant) proportionality factor;

means for combining and processing at least selected sets of said transducer signals to produce sub-set signals;



means for comparing at least some of said product signals with said sub-set signals to produce comparator signals representative of the relative strength ratio (i.e., greater or lesser) between certain ones or sets of said product signals and certain ones or sets of said sub-set signals;

means for directing said comparator signals to an output utilization means; i.e., a visual display.

4,435,079

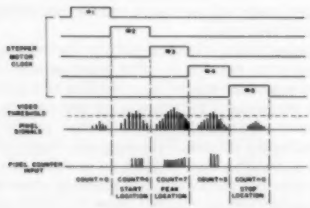
APPARATUS FOR TESTING LENSES BY DETERMINING BEST FOCUS

Robert P. Hennick, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 28, 1981, Ser. No. 297,183

Int. Cl.³ G01B 9/00; G01J 1/00

U.S. Cl. 356—123 **11 Claims**



1. A signal processing system for determining an optimum point in an operational cycle consisting of a plurality of sequential periods, comprising:

a signal source;

means responsive to said signal source for producing pulses during said plurality of sequential periods;

selecting means for selecting said pulses which are above a minimum threshold, and producing selected pulses;

counter logic means for counting said selected pulses during said plurality of sequential periods, and producing a pulse count for each respective period;

pulse count comparison means responsive to the pulse count for each respective period for detecting at least two data points at which the pulse count of said counter logic means reaches a predetermined level; and

data computing means for providing an output corresponding to the optimum point located equally spaced between said two data points.

4,435,080

ARRANGEMENT FOR MEASUREMENT OF DYNAMIC PROPERTIES OF MICROPARTICLES

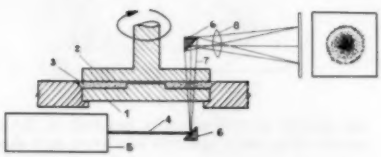
Zdenek Maly, Nationalstrasse 7, Kreuzlingen CH-8280, Switzerland, and Vladislav Blazek, Konradinstr. 2, Munich D-8000, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,983

Claims priority, application Switzerland, May 23, 1980, 4084/80

Int. Cl.³ G01N 21/85, 21/53

U.S. Cl. 356—426 **8 Claims**



1. A device for measuring the dynamic properties of microparticles which comprises: at least two flat measuring bodies spaced from each other, with the distance therebetween being adjustable and the space therebetween being filled with a suspension of microparticles to be measured, wherein at least one of said bodies is movable so that a defined magnitude of fluid shear stress is generated in the suspension; means for passing a light beam through both bodies and said suspension so that during rotation and when rotation is stopped different diffraction patterns are generated; and means for measuring said diffraction patterns, thereby extracting useful data concerning the dynamic properties of the microparticles.

4,435,081

CONCRETE MIXING PLANTS WITH ELEVATOR WHEEL

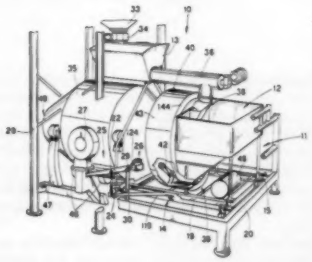
Dino Del Fabbro, Basaldella di Campoformido, Italy, assignor to Officine Riunite Udine Spa, Italy

Filed Mar. 8, 1982, Ser. No. 355,371

Claims priority, application Italy, Mar. 20, 1981, 83345 A/81

Int. Cl.³ B01F 15/02

U.S. Cl. 366—18 **6 Claims**



1. Concrete mixing plant for dosing and mixing aggregate materials and cement inside a concrete mixer or mixing machine, comprising a container to collect aggregate, a conveyor and chute means for delivering cement to said mixer, weighing and/or dosing means supporting said aggregate container and cement conveyor and chute means, a concrete mixer having a charging inlet, a plurality of legs and/or supports to uphold said aggregate container, cement conveyor and chute means and weighing means, and an elevator wheel for receiving and premixing the aggregates, said wheel being located between the container and the concrete mixer and connected frontally to the charging inlet, said cement chute means passing through

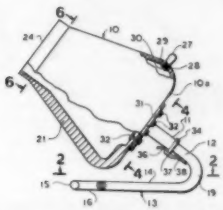
the interior space of said elevator wheel, a portion of said container positioned within the interior space of said elevator wheel said elevator wheel delivering aggregate onto cement being delivered to said mixer.

4,435,082

ROTARY DRUM MIXING DEVICE

Robert J. Bishop, 1083 Bloomfield Ave., West Caldwell, N.J. 07006

Filed May 21, 1982, Ser. No. 380,530
Int. Cl.³ B28C *5/18, 5/20, 7/16*
U.S. Cl. 366—47 **26 Claims**



1. A mixing device comprising a unitary frame extending front to rear of the device, said frame having a base portion with a transverse member forming the front end of said frame and providing a pivot fulcrum at said front end, a short connecting portion joined to said transverse member, said connecting portion terminating in an angularly, forwardly and upwardly extending portion providing a bearing portion at the rear end of said frame, the angularity of said bearing portion being about 35+ with respect to the plane of said base portion, a generally pear shaped mixing drum providing large and small ends, said drum being closed and substantially flat at the large end and open at the small end, said closed end having an elongated axial socket, said axial socket slidably engaging said bearing end of the frame to rotatably support said drum with its axis at said angle of approximately 35°, axially extending rib means on the inner surface of said drum for lifting contents in the rotation thereof, external means of said drum facilitating application of circumferential force to rotate the drum, the length of the connecting portion of said frame being such as to dispose said pivot fulcrum slightly forwardly of the center of gravity of the drum, readily engageable and disengageable means on said bearing portion and socket to support the drum against axial movement when the assemblage is tilted around said fulcrum to discharge drum contents, said bearing portion being the only support for said drum, and said drum being readily removable from said frame upon disengagement of said last named means.

4,435,083

SELF-CLAMPING ROTARY VIBRATOR AND MOUNT THEREFOR

Carl G. Matson, Little Rock, Ark., assignor to Hamilton Equipment Co., Inc., Fort Worth, Tex.

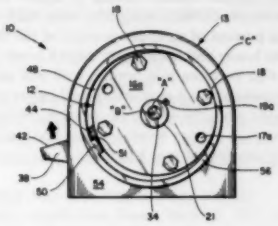
Filed Oct. 13, 1981, Ser. No. 310,500
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—114 **11 Claims**

1. A rotary vibrator energized by driving means coupled thereto and mounting assembly therefor comprising:

a rotor coupled to said driving means and displaced about an axis in response thereto;

a cylindrical housing having a circular cross-section encompassing and coupled to said rotor so as to rotate in a migratory manner about said axis in a direction opposite to that of said orbiting rotor, said housing including a first clamping strip thereon; and

a cylindrical casing having a circular cross-section and adapted to be affixed to a structure to be vibrated and axially positioned with respect to said housing and in close proximity thereto, said casing including a second clamping strip wherein the migratory rotation of said housing causes the wedging engagement of said first and second clamping strips with the adjacent inner surface of said casing and adjacent outer surface of said housing, respectively, so as to form first and second points of contact defined by said first clamping strip and the inner surface of said casing and said second clamping strip and the outer surface of said housing, respectively, and a third point of contact distally located with respect to said first and second points of contact between said housing and said casing.

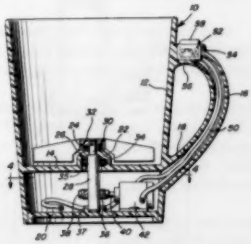


4,435,084

AUTOMATIC STIRRER FOR CUP

Tom L. Calhoun, and Bill L. Calhoun, both of P. O. Box 447, Buttonwillow, Calif. 93206

Filed Dec. 21, 1982, Ser. No. 452,019
Int. Cl.³ B01F *7/18*
U.S. Cl. 366—130 **6 Claims**



1. A beverage cup defining an upwardly opening receptacle including upstanding peripherally extending sides and closed at its lower end portion by a false bottom wall extending between and sealed relative to said sides above the lower ends thereof, said receptacle sides extending downwardly below said false bottom wall and defining a downwardly opening recess therebelow bound by the lower end portions of said sides, said false bottom wall having a central upstanding bore formed therethrough, an upstanding shaft sealingly journaled through said bore and including blade means carried by the upper end thereof and closely overlying said false bottom wall, bearing means supported from the lower end portions of said sides below said false bottom wall and with which the lower portion of said shaft spaced below said false bottom wall is guidingly engaged, said lower portion of said shaft including means operative to allow rotary torque input to said shaft, said bearing means including a bottom wall secured between the lower end portions of said sides below said false bottom wall, a central portion of said bottom wall including a bearing journal in which said lower portion of said shaft is journaled, said means operative to allow rotary torque input to said shaft

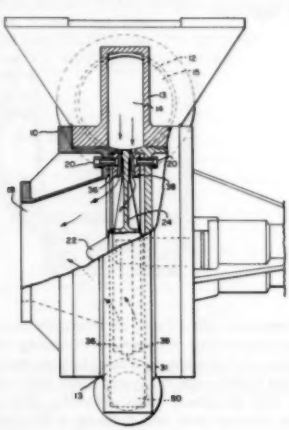
comprising a worm wheel mounted on said shaft, a miniature electric motor mounted on one of said walls between the latter and having a rotary output shaft equipped with a worm gear meshed with said worm wheel, a battery supported between said false bottom wall and said bottom wall and electrically connected to said motor by circuitry having a manually operable control switch serially connected therein, a laterally offset upstanding tubular handle having an upper end directed inwardly toward, formed integrally with and closed by one peripheral portion of an upper portion of the side wall of said cup and its lower end opening through a lower portion of said cup side wall between said bottom wall and said false bottom wall, said switch being recessed in said upper end of said handle and said circuitry including portions thereof electrically connecting said battery to said motor and extending through the hollow interior of said handle.

4,435,085

MIXER FOR USE IN PULP PROCESSES

Oscar Luthi, Nashua, and Lawrence A. Carlsmith, Amherst, both of N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 6, 1982, Ser. No. 406,112
Int. Cl.³ B01F *15/02, 5/14*
U.S. Cl. 366—155 **10 Claims**



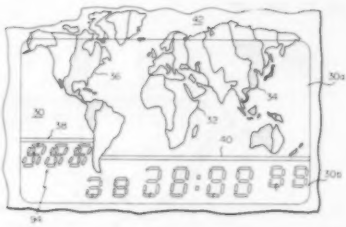
1. A mixer for mixing pulp with a bleaching agent comprising: a generally cylindrical housing; a pulp inlet adapted to feed pulp into the housing; a pulp outlet; a rotor coaxially mounted within the housing, said rotor having a wheel having radially extending grooves which are located in the pulp flow path between the pulp inlet and the pulp outlet, at least a part of the radial portion of the wheel with the radial grooves defining with a part of the housing an annular high intensity mixing zone; and at least one bleaching agent inlet located so that intensive mixing of the bleaching agent and pulp will occur in the high intensity mixing zone, whereby the pulp flows from the pulp inlet, through the annular high intensity mixing zone, and out the pulp outlet.

4,435,086

LIQUID CRYSTAL DISPLAY DEVICE FOR WORLD TIME WRISTWATCH

Yoshiaki Kato, Higashimurayama, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 22,496, Mar. 21, 1979, abandoned. This application Jul. 16, 1981, Ser. No. 283,985
Claims priority, application Japan, Mar. 25, 1978, 53-034563
Int. Cl.³ G04B *19/22*
U.S. Cl. 368—22 **12 Claims**



1. A liquid crystal display device for a world time display electronic wristwatch, comprising:

an upper glass substrate;

a plurality of time zone indicating segment electrodes formed on an inner surface of said upper glass substrate in such a manner that said plurality of time zone indicating segment electrodes provide a shape of a world map, each of said plurality of time zone indicating segment electrodes having an external electrode terminal to selectively turn on and off said each of said plurality of time zone indicating segment electrodes;

a lower glass substrate spaced from said upper glass substrate;

a common electrode formed on an inner surface of said lower glass substrate and having a shape corresponding to said world map, said common electrode facing said plurality of time zone indicating segment electrodes; and

a sealing member disposed between said upper and lower glass substrates to provide a hermetic sealing;

a liquid crystal material disposed in a space between said upper and lower glass substrate, by a partition member made of a sealing material;

a time display section; and

a location display section composed of a plurality of alphabetic letters indicating segment electrodes and a common electrode facing thereto, said location display section displaying the name of said selected location whose current time is displayed by said time display section.

4,435,087

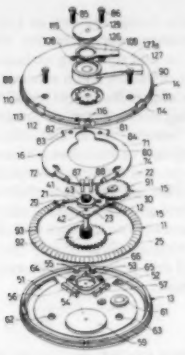
MOTOR-DRIVEN MOVEMENT FOR TIMEPIECE

Akio Matsumoto, Neyagawa, and Kazuhiro Araki, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 31, 1981, Ser. No. 336,056
Claims priority, application Japan, Jan. 14, 1981, 56-6230
Int. Cl.³ G04B *19/00*
U.S. Cl. 368—76 **4 Claims**

1. A motor-driven movement for time-pieces comprising a stator block in which a coil is wound on a core of a ring shape and formed of a round-sectioned and bar-shaped magnetic material and magnetic poles formed of respective end portions of said core are opposed in the radial direction of said ring shape of the core, one of said end portions of said core being positioned in the peripheral direction and the other end portion being bent to an L-shape, a rotor arranged between respective said magnetic poles, an output gear train including a minute hand wheel disposed as displaced in the radial direction from

the center of the ring shape, and a circuit block for controlling power supply to said coil to operate said output gear train stepwise, said stator block, rotor, output gear train and circuit block being arranged within a pair of mutually fitting lower



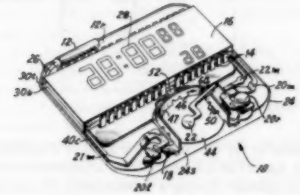
and upper casings slightly larger than said stator block, a sector base having an arcuate part disposed along one end portion of said core and two radial sides disposed along the other end portion is provided in one of said casings and a circular recess for receiving said rotor is formed in said sector base.

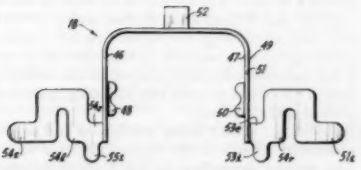
4,435,088

BATTERY SWITCH PLATE FOR A TIMEPIECE

Leonard M. Dorfman, Campbell, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 9, 1982, Ser. No. 406,656
Int. Cl.³ G04C *23/02*
U.S. Cl. 368—88 **8 Claims**





1. A timepiece module assembly including a rear pod having an aperture, a battery having first and second terminals, battery contact means electrically connected to said first battery terminal, a lead frame having a plurality of conducting members a number of which are electrically connected on one side to an integrated circuit chip and on the other side to an electrooptical display, at least two spaced resilient switch contacts connected to said conducting members, and a battery switch plate, said battery switch plate comprising:

(a) a substantially U-shaped electrically conductive frame removably received by said aperture and supported by said rear pod and removably electrically connected to at least one of said lead frame conducting members, said frame providing support for the battery and making electrical contact with said second battery terminal, and

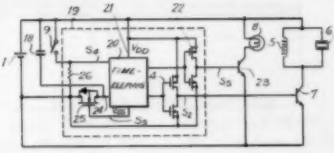
(b) at least two switch plate members extending oppositely outward from the end portions of said substantially U-shaped frame in spaced apart underlying relation to said switch contacts for providing for correction and change of the timekeeping function of the timepiece when a predetermined switch contact is independently forced into electrical contact with a corresponding underlying switch plate member.

4,435,089

POWER CIRCUIT FOR AN ELECTRONIC TIMEPIECE

Hiroyuki Chihara, Suwa, and Masuo Kitano, Matsumoto, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shimauchi Seiki Kabushiki Kaisha, Nagano, both of, Japan

Filed May 17, 1982, Ser. No. 378,947
Claims priority, application Japan, May 18, 1981, 56-74535
Int. Cl.³ G04C *10/00*
U.S. Cl. 368—204 **10 Claims**



1. A power circuit for an electronic timepiece, comprising:

a power supply providing a voltage output;

a first load in series with first switch means, said first load and first switch means being connected in series across said power supply, said first load drawing a heavy current from said power supply when said first switch means is closed;

means for placing said first load in an ON state;

a second load and second switch means being connected in series across said power supply, said second load drawing a low current;

a circuit means for periodically opening and closing said first switch means while said first load is in said ON state;

circuit means for periodically opening and closing said second switch means, said second switch means being adapted to open when said first switch means is closed and vice versa;

a power capacitor connected in parallel with said second load, said power capacitor discharging through said second load when said second switch means is open and charging from said power supply through said second switch means when said second switch means is closed, said second load being isolated from said power supply when said first load is activated by closing said first switch means.

4,435,090

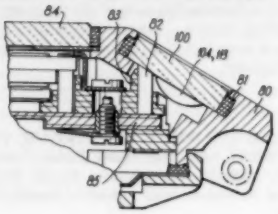
STATIC PICK-UP FOR TIMEPIECE

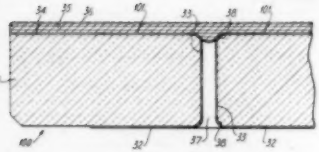
Pierre-Ernest Jaccard, Bienne, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Feb. 25, 1981, Ser. No. 238,291
Claims priority, application Switzerland, Mar. 7, 1980, 1796/80
Int. Cl.³ G04B *29/00*
U.S. Cl. 368—320 **13 Claims**

1. A static pick-up for a timepiece comprising at least two juxtaposed touch sensitive capacitive electrodes arranged to be manually actuated and electronic means arranged and adapted to detect each position of a finger which corresponds to at least

one symbol in the form of a digit, a letter or special sign, the arrangement being fashioned as a compact unit including an electrically insulating shock resistant substrate bearing on its upper surface a first metallization serving as electrodes and on its lower surface a second metallization serving as conductors arranged to bear said electronic means and input and output





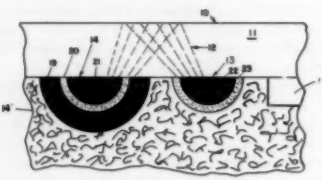
terminals of the pick-up, said first and second metallizations being intercoupled by electric coupling means, said electric coupling means between said first and second metallizations being comprised by metallized passages, said electrodes being covered by a dielectric, said dielectric in turn being covered by at least one abrasion resistant decorative layer.

4,435,091

DEW POINT SENSOR

Robert J. Nedreski, 5073 Wiltsie Rd., Erie, Pa. 16510

Filed Jul. 24, 1981, Ser. No. 286,656
Int. Cl.³ G01N *25/12*
U.S. Cl. 374—20 **6 Claims**



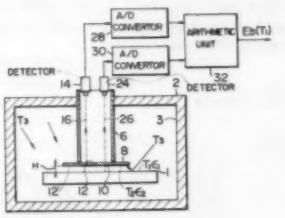
1. A dew point sensor comprising,
an insulation means having a first side and a second side,
said first side of said insulation means having a reflecting surface on said first side,
radiation-emitting means on said sensor on said second side of said insulation means,
electronic circuit means including radiation sensing means and cooling means and temperature sensing means on the second side of said insulation means,
output means connected to said circuit means,
said insulation means being relatively transparent to the radiation emitted by said radiation-emitting means,
said reflecting surface being adapted to be exposed to a gas containing vapor and adapted to condense said vapor at a temperature at the dew point of said gas,
said insulation means having a refractive index substantially different from either the gas whose dew point is being measured or the condensed vapor of said gas but not necessarily different than both,
said insulation means being a relatively good electrical insulator,
said cooling means being disposed in heat transfer relation with said insulation means whereby when no condensation is formed on said reflecting surface a portion of emitted radiation is refracted and a substantial portion of said radiation from said radiation means is reflected onto said radiation sensing means allowing current to flow through said radiation sensing means and said electronic circuit thereby cooling said insulation means and causing condensation to form on said reflecting surface thereby changing the ratio of reflection at said surface whereby said reflected radiation to said radiation sensing means is decreased and current flow through said circuit is decreased, reversing the cooling effect of said circuit and providing an indication of dew point temperature from said temperature sensing means.

4,435,092

SURFACE TEMPERATURE MEASURING APPARATUS FOR OBJECT WITHIN FURNACE

Tohru Iuchi, Kawasaki, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 285,192
Claims priority, application Japan, Jul. 25, 1980, 55-102114; Jun. 2, 1981, 56-84856
Int. Cl.³ G01J *5/06, 5/14*
U.S. Cl. 374—129 **8 Claims**



1. An apparatus for measuring the surface temperature of an object being heated in a furnace, said apparatus comprising:
a shielding cylinder having a substantially closed end and an open end, said shielding cylinder being adapted to be disposed with said open end facing toward the object within a furnace; and a shield plate fixed to said shielding cylinder and formed at its portion facing toward the object with an opening communicating the exterior of said shielding cylinder with the interior thereof, so as to allow a first radiation emitted depending on the surface temperature of the object to enter said shielding cylinder and pass toward said outer end;
said shielding cylinder being configured and adapted to be positioned relative to the object to block a second radiation emitted depending on the high temperature atmosphere within the furnace from entering said shielding cylinder, and said shield plate being configured to serve as a reference radiation source means for emitting from its inner wall portion disposed within said cylinder and from its outer wall portion facing toward the object, a third radiation which, on the one hand, is directed from said inner wall portion toward said closed end and, on the other hand, is directed from said outer wall portion and combined with said first radiation entering said shielding cylinder means, whereby the combined effects of said first and third radiations enter said shielding cylinder through said opening;
radiation detecting means provided at said closed end of said

shielding cylinder for separately detecting said combined effect of said first and third radiations and a sole effect of said third radiation; and

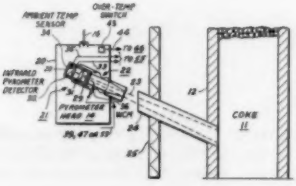
means for determining the surface temperature of said object from the values of said combined effect and said sole effect detected by said detecting means.

4,435,093

PYROMETER WITH SIGHTING WINDOW CLEANLINESS MONITOR

Richard H. Krause; Thomas J. Pfeiffer, and Vincent V. Horvath, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 8, 1981, Ser. No. 328,769
Int. Cl.³ G01J *5/04, 5/26*
U.S. Cl. 374—129 **9 Claims**



1. Apparatus for measuring temperature of a high temperature irradiant mass, said apparatus comprising:

(a) pyrometer means for measuring temperature of said irradiant mass including:

(i) a first housing closed at one end and having a sighting window at an opposite end, said sighting window having an outside surface subject to environmental matter;

(ii) pyrometer detector means within said first housing for producing a signal which varies proportional to the irradiant mass temperature and an optical error induced by the environmental matter on said outside surface of said sighting window;

(iii) lens means within said first housing for focusing an irradiant image of said irradiant mass on said pyrometer detector means; and

(iv) said first housing fitted within an adjustable mount in a second housing,

(b) sighting window cleanliness monitor means for detecting sighting window cleanliness including:

(i) monitor light assembly means for generating a stable source of light;

(ii) first light conducting fibre optic means within said second housing and outside said sighting window for transmitting light from said monitor light assembly means first through the environmental matter on said outside surface and thereafter through said sighting window into said pyrometer detector means; and

(c) circuit means with means for indicating the need for correcting the irradiant mass temperature signals from said pyrometer detector means due to optical error induced by the environmental matter on said outside surface of said sighting window.

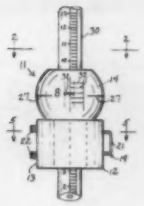
4,435,094

THERMOMETER SCALE MAGNIFIER

Justin J. Shapiro, 620 Hearst Ave., Berkeley, Calif. 94710

Filed Jun. 23, 1982, Ser. No. 391,453
Int. Cl.³ G01K *1/06*
U.S. Cl. 374—191 **11 Claims**

1. A magnifying indicator for an elongated tubular instrument of the type having a linearly extending scale, said indicator comprising a main body including a base block and an upstanding lens rigidly secured on the base block, the rear portion of the base block being formed with a vertical groove in which the elongated instrument is receivable, and a spring arm connected to the rear portion of the base block and transversely overlying said groove and being resiliently engageable with such instrument to retain the instrument in the groove and to limit angular displacement of the instrument relative to the



lens, wherein said spring arm comprises a generally U-shaped wire spring member having anchoring elements, said base block having bores adjacent one side of the groove lockingly receiving said anchoring elements.

4,435,095

HOT TUB THERMOMETER

James B. Jones, 913 Howard St., Venice, Calif. 90291, and Ron B. Soyka, Woodland Hills, Calif., assignors to James B. Jones, Woodland Hills, Calif.

Filed Jan. 29, 1982, Ser. No. 343,913
Int. Cl.³ F21V *33/00;* **F21K** *1/14*
U.S. Cl. 374—194 **4 Claims**

1. In a thermometer for a hot tub or the like, the combination of:

a housing;

means for supporting said housing in a hot tub or the like in a first orientation, with said housing being manually moveable to a second opposite orientation;

a temperature sensor and indicator positioned within said housing;

a light bulb carried in said housing for directing light onto said temperature indicator;

an orientation sensitive power supply for said bulb for energizing said bulb when said housing is in said second orientation, said power supply including a battery and a mercury switch connected in series with said bulb;

a cap on said housing adjacent said power supply; and

a pair of electrical conducting plates with an insulating spacer therebetween, and an electrical conducting pin positioned at said plate,

with said plates connected in series with said bulb, battery and switch, and

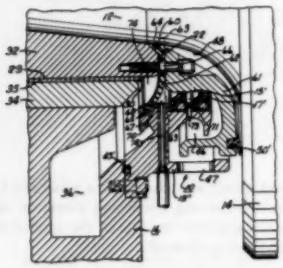
with said cap moveable from a first position with said pin out of engagement with said pair of plates, to a second position with said pin punched through said plates and spacer electrically bridging said plates.

4,435,096

SEALING ARRANGEMENT FOR A ROTATABLE MEMBER

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Sep. 11, 1981, Ser. No. 301,374
Int. Cl.[3] F16C *33/74;* F16J *15/32*
U.S. Cl. 384—147 11 Claims



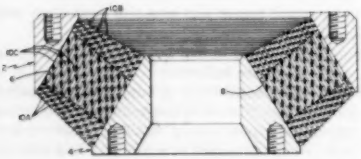
1. A sealing arrangement for sealing a stationary bearing chock to a rotatable roll member neck, said arrangement comprising a stationary bearing chock, a rotatable roll member having a roll member neck coaxially received in a sleeve secured for rotation therewith, said sleeve journaled for rotation in said bearing chock, an extension ring annularly secured to one end of said sleeve, a normally flat washer type annular thrower seal of elastomeric material annularly engaged between said extension ring and said one end of said sleeve to provide a seal therebetween with inner and outer annular peripheral portions of said thrower seal radially protruding, said inner peripheral portion of said thrower seal annularly engaging and stretched over said roll member neck under elastic deformation of said seal for annular static seal engagement therebetween, a peripheral side face of said outer peripheral portion of said thrower seal annularly engaging an annular seal rubbing surface of said bearing chock under elastic deformation of said seal to provide an annular rubbing seal therebetween.

4,435,097

LAMINATED BEARING STRUCTURES

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Continuation of Ser. No. 806,811, Jun. 15, 1977, abandoned.
This application Mar. 5, 1979, Ser. No. 17,823
Int. Cl.[3] F16C *27/06, 27/08*
U.S. Cl. 384—221 10 Claims



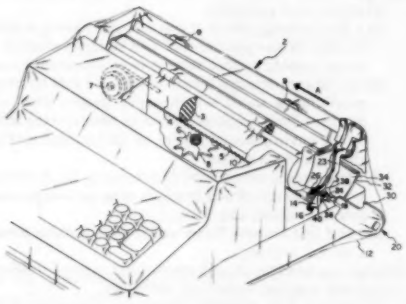
1. A compressive load carrying laminated bearing comprising a plurality of alternating resilient layers and non-extensible layers generally concentrically disposed about a common center, at least some of said resilient layers each comprising at least first and second end portions at opposite ends of said bearing and a third portion between said first and second end portions, said first and second end portions having a modulus of elasticity which is different from the modulus of elasticity of said third portion, said first and second end portions being made of a first material and said third portions being made of a second material, and the respective widths of said portions being such that the effective moduli of elasticity of said at least some layers differ inversely with the distance between said at least some layers and said common center.

4,435,098

OFFICE MACHINE ESCAPEMENT DISENGAGEMENT AND AUTOMATIC ENGAGEMENT MECHANISM

William E. Cleveland, Homer, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,156
Int. Cl.[3] B41J *29/56*
U.S. Cl. 400—674 4 Claims



1. A mechanism for disengaging and engaging an escapement mechanism for use in office machines such as typewriters and the like wherein the escapement mechanism selectively engages a carriage rack of a movable carriage to enable incremental carriage advancement, the disengaging and engaging mechanism comprising:

a pivotal arm connected to the carriage rack for causing pivotal movement of the carriage rack therewith;

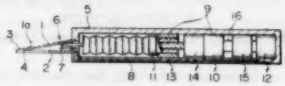
a carriage release lever connected to the carriage rack by a spring means for maintaining the carriage rack in engagement with the escapement mechanism, said carriage release lever having an opening therein;

separator means insertable between the opening in the carriage release lever and the pivotal arm for pivoting the arm and causing pivotal movement of the carriage rack therewith out of engagement with the escapement mechanism; and, means including the separator means abutting a portion of the typewriter in response to carriage advancement for automatically ejecting the separator means from between the opening in the carriage release lever and the pivotal arm, whereby the spring means connected to the carriage release lever causes the carriage rack to be pivoted into engagement with the escapement mechanism.

4,435,099
FOUNTAIN PEN WITH MOTOR FEED

Koichi Murahara, Isehara, Japan, assignor to Piolt, Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,788
Claims priority, application Japan, Mar. 13, 1979, 54-28970
Int. Cl.³ B43K 5/06, 5/18
U.S. Cl. 401—145 20 Claims

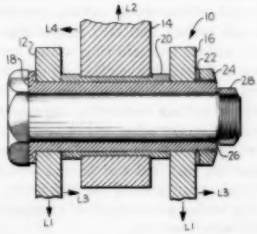


1. A hand-held fountain pen comprising:
a pen tip having a slit formation region and a slit formed therein;
an ink holder covering said slit formation region in said pen tip and shaped so as to form a discrete ink pool formed by capillary action and/or surface tension between said ink holder and said pen tip and said ink pool held in place in any functional position of said pen, said ink pool communicating with said slit;
a detector provided in said ink pool for detecting the quantity of ink therein;
a pen holder coupled to said pen tip, said pen holder having an ink storing section with conduit means opening into said ink pool, an ink delivery device coupled to said ink storing section for delivering ink under pressure, an electric power source for operating said ink delivery device, and a power delivery circuit connecting said electric source to said ink delivery device; and
a switch circuit connecting said detector to said power delivery circuit whereby in response to a detection of the absence of ink, [the detector] said power delivery circuit operates said ink delivery device to supply ink to said ink holder from said ink storing section.

4,435,100
FAIL-SAFE ZERO-LOAD HINGE/PIVOT

Ronald L. Cox, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 21, 1981, Ser. No. 333,114
Int. Cl.³ B25G 3/00; F16D 1/00; F16G 11/00
U.S. Cl. 403—27 7 Claims

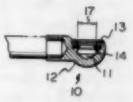


1. A fail-safe hinge for joining linkage members comprising:
a primary sleeve inserted through the linkage members having a flange on one end and threads on the opposite end and an axial bore;
a primary nut threaded on the sleeve that captures and holds the linkage members in juxtaposition;
a secondary support member axially inserted inside the primary sleeve, and having a diameter with a predetermined clearance therein and having a head on one end and threads on its opposite end; and
a secondary nut in threaded engagement with said secondary support member, limited travel of said nut limited on said support member to provide axial clearance between said secondary support member and nut and the combined primary sleeve and nut said secondary support member and secondary nut being of such a size that upon failure of the primary sleeve and nut combination said secondary support member and nut maintain the linkage members in juxtaposition and hold the primary sleeve and nut combination in their relative position.

4,435,101
BALL JOINT

Minoru Sugiyama, and Shinji Kaneko, both of Kanagawa, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Dec. 22, 1981, Ser. No. 333,615
Claims priority, application Japan, Dec. 29, 1980, 55-191263[U]
Int. Cl.³ F16C 11/06
U.S. Cl. 403—122 5 Claims



1. A ball joint including:
a ball member having a ball end;
a socket member comprising two components formed of synthetic resin material, having a recess therein for receiving said ball end of said ball member, said recess having a ring receiving portion at the upper end thereof; and
an annular metal retaining ring having a split therein of normally zero gap received in said ring receiving portion of said recess, said ring being resiliently radially expandable, said gap widening during expansion of said ring, said ring in its unexpanded state having an inner diameter less than the diameter of said ball end;
said two components being supersonically welded together so as to irremovably hold said ring in said ring receiving portion, said ring receiving portion being shaped to permit said ring to radially expand to receive said ball end therethrough into said recess when said ball end is pushed downward thereon, and to block said ring from expanding when said ball end is pulled outward against said ring from within said recess, so as to block removal of said ball end from said recess.

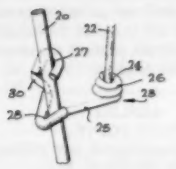
4,435,102
TIE DOWN CONNECTOR

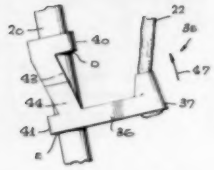
Robert G. Smith, 2707-½ Rockefeller La., Redondo Beach, Calif. 90278

Filed Jan. 20, 1982, Ser. No. 340,863
Int. Cl.³ F16G 11/00
U.S. Cl. 403—206 7 Claims

1. A tie down connector for releasably securing the end of a bungee cord comprising the combination of:
a bungee cord;
an elongated body terminated at one end in a holder section provided with a pair of registered and coaxially disposed semi-circular U-shaped recessed portions axially spaced a distance substantially equal to twice the depth of a recess and terminated at its other end in a conical, open-ended receptacle;
said holder semi-circular U-shaped portions characterized as a retainer arrangement having spaced apart recesses opening from opposite directions;
a connection element integrally disposed and joined between said pair of semi-circular U-shaped portions to separate and maintain said recesses in substantially fixed and spaced apart relationship;
said bungee cord extending from the small end of the conical receptacle;

a knot carried on the end of said bungee cord having a physical size greater than the opening in said conical





receptacle of said body and secured therein so that said bungee card is retained thereon.

4,435,103

CONNECTION FOR FURNITURE FRAME PARTS, PARTICULARLY OFFICE FURNITURE

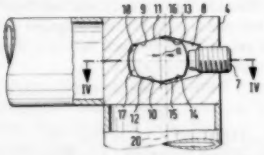
Norbert Becker, Weringhauser Strasse 15, D-4782 Erwitte 2, and Norbert Hildebrandt, Grüner Winkel 32, D-4782 Erwitte 1, both of Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,119

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039389

Int. Cl.³ F16B *7/00, 12/36, 13/00*

U.S. Cl. 403—292 **8 Claims**



1. A furniture frame comprising first and second frame members connected to one another, said first frame member having a dowel extending outwardly thereof, said second frame member having an elongated opening therein, said dowel extending into said opening, said dowel having a pair of spaced exterior planar surfaces which are disposed on opposite sides of the longitudinal central plane of said dowel and which are inclined at angles to said longitudinal central plane of said dowel, said opening having a pair of spaced interior planar surfaces which are disposed on opposite sides of the longitudinal central plane of said opening and which are inclined at angles to said longitudinal central plane of said opening, said inclined exterior dowel surfaces being in abutment with said inclined interior surfaces of said opening respectively, the angles of inclination of said exterior dowel surfaces being slightly greater than the angles of inclination of said interior opening surfaces, and a screw member in thread engagement with said second frame member and extending into said opening at right angles to the longitudinal axis of said dowel, said screw member being positioned to engage an exterior side of said dowel and to apply a force thereto in a direction transverse to said axis of said dowel to press said inclined exterior surfaces of said dowel into forceable engagement with said differently inclined interior surfaces of said opening thereby to securely connect said first and second furniture frame members to one another.

4,435,104

RING WEDGE JOINT FOR SOLID OR LAMINATED WOOD SECTIONS

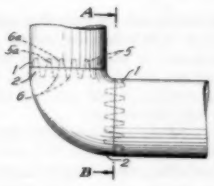
Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,190

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135030

Int. Cl.³ F16B *12/00*

U.S. Cl. 403—332 **7 Claims**



1. Ring wedge joint for solid or laminated wood sections, such as rod-shaped or bar-shaped wood sections used as chair parts, tool shanks, window frame members and the like, comprising an axially extending first wood section having a first end surface extending transversely of the axis thereof, an axially extending second wood section having a second end surface extending transversely of the axis thereof, each of said first and second end surfaces being axially aligned and lying in a comma plane substantially normal to said axes and havng extending therefrom alternating, co-extensive concentric ring wedges and ring wedge grooves extending around the aligned axes of said first and second wood sections, said first wood section having a frusto-conically shaped dowel centered on the axis thereof spaced radially inwardly from the adjacent said ring wedge on said first wood section by one said concentric ring wedge groove, said second wood section having a frusto-conically shaped wedge groove corresponding to said frusto-conically shaped dowel encircled by the innermost said ring wedge on said second wood section, and said ring wedges on said first end surface and said ring wedge grooves on said second end surface and said ring wedge grooves on said first end surface and said ring wedges on said second end surface are aligned so that said ring wedges on said first and second ends interfit in surface contacting engagement with said ring wedge grooves on the other one of said first and second ends, said ring wedges and said ring wedge grooves are equidistantly spaced apart on said first and second wood sections and the axially extending surfaces of the interfitting said ring wedges and said ring wedge grooves afford a snug meshing of said first and second wood sections.

4,435,105

ADJUSTABLE LOCK ARRANGEMENT AND METHOD FOR MAKING SAME

Neil Rampley, La Porte, Ind., assignor to Heath Manufacturing Company, Coopersville, Mich.

Filed Feb. 22, 1982, Ser. No. 350,735

Int. Cl.³ F16B *7/10*

U.S. Cl. 403—109 **41 Claims**

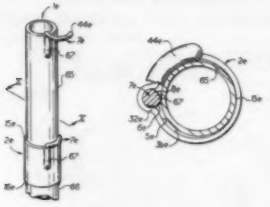
1. An adjustable lock arrangement for rods and the like, comprising:

a rigid collar having a central opening and a central, longitudinal axis;

a rod having an exterior surface shaped for close, telescoping reception in the central opening of said collar;

said collar having an interior surface defining said central opening, with an elongate keyway extending along at least a portion of said interior surface in a direction generally parallel with the longitudinal axis of said collar; said keyway opening into said central opening, and having a central, longitudinal axis;

a key rotatably mounted in said keyway for rotation about an axis disposed generally parallel with the longitudinal axis of said keyway; said key having an eccentric transverse cross-sectional shape, with first and second circumferentially spaced apart surfaces; said key being rotatable in said keyway between locked and unlocked positions;



said first key surface being disposed sufficiently close to the rotational axis of said key that when said first key surface is located in the unlocked position, said first key surface is in a non-abutting relationship with the exterior surface of said rod and permits relative longitudinal translation between said collar and said rod;

said second key surface being spaced sufficiently apart from the rotational axis of said key that when said second key surface is located in the locked position, said second key surface abuttingly engages the exterior surface of said rod and frictionally locks said collar to said rod, whereby said key rotates to frictionally engage and lock said collar and rod.

4,435,106

DIRECTING-BARRIER FOR A ROADWAY

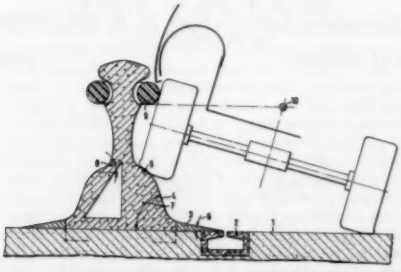
Günther Förster, Neuen Bäue 27, D-6300 Giessen, and German Gresser, Schönleinstrasse 3, D-8700 Würzburg, both of Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,558

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106047

Int. Cl.³ E01F *15/00*

U.S. Cl. 404—6 **10 Claims**



1. In a safety barrier adapted to be placed adjacent a roadway having an upper surface, said safety barrier having means defining a driving surface thereon which extends generally upwardly and outwardly from a lateral edge of said roadway surface and includes a first portion which is adjacent said lateral edge of said roadway surface and rises gently, and wherein said saftey barrier has a guide portion spaced vertically above and overhanging at least part of said driving surface, the improvement comprising wherein said driving surface includes second and third portions in addition to said first portion, said second portion being between and contiguous with said first and third portions and merging smoothly therewith, wherein said second portion of said driving surface rises steeply and includes a generally concave region followed by a generally convex region, wherein said third portion of said driving surface is approximately flat and rises gently, and wherein said guide portion overhangs said third portion of said driving surface.

4,435,107

TRAFFIC DELINEATOR

Lawrence J. Sweeney, Seneca, Pa., assignor to Franklin Steel Company, Franklin, Pa.

Continuation of Ser. No. 101,439, Dec. 10, 1979. This application Aug. 5, 1981, Ser. No. 290,249

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ E01F *9/01*

U.S. Cl. 404—10 **2 Claims**

1. A traffic delineator assembly comprising:

an elongated rigid anchor post having an upper end to receive blows and to be driven into a support surface such as the ground or roadway surface or the like with its upper end to be located below ground;

an elongated rigid pilot means mounted on said anchor means and adapted to be driven into the ground or roadway surface with said anchor means;

said rigid pilot means being located in a parallel vertical relationship with said anchor post and being located below the upper edge of the anchor post so as to be driven into the ground with the anchor post;

flexible delineator means mounted on said anchor means and defining a lower edge, said delineator means being located so that said lower edge follows said pilot plate means into the ground or roadway surface and being adapted to extend above the ground or roadway surface when said anchor means and pilot plate means are driven into the ground or roadway surface, said delineator means being sufficiently rigid to be unaffected by static conditions yet resiliently deformable to bend upon impact and spring back substantially to its pre-bend position

and fastener means connecting the flexible delineator means

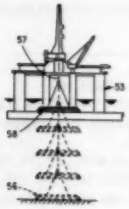
to the rigid anchor post and to the rigid pilot means and to be located below ground.

4,435,108

METHOD OF INSTALLING SUB-SEA TEMPLATES

James E. Hampton, Peterculter, Scotland, assignor to SEDCO, Inc., Dallas, Tex.

Filed Aug. 11, 1981, Ser. No. 292,014
Int. Cl.³ E02B 17/02
U.S. Cl. 405—209 **15 Claims**



1. A method of installing a subsea template at a predetermined site on a seabed comprising the steps of:

providing a semi-submersible drilling vessel having a pair of spaced apart submersible hulls, a deck supported above said hulls and connected to said hulls by frame means of said vessel, and hoisting apparatus on said vessel extending through an opening in said deck between said hulls;

providing at least one subsea template having a fixed area greater than said opening in said deck;

positioning said template with respect to said vessel beneath said deck and between said hulls and lifting said template with said hoisting apparatus to a transport position beneath said deck and between said hulls;

securing said template to said vessel;

moving said vessel and said template to said site; and

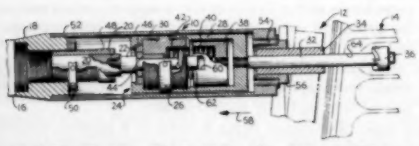
lowering said template from said vessel to said seabed.

4,435,109

DWELL ASSEMBLY BACK SPOTFACE

Vernon H. Wilder, Murfreesboro, Tenn., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 6, 1982, Ser. No. 406,955
Int. Cl.³ B23B 39/00
U.S. Cl. 408—14 **5 Claims**



1. A Dwell Assembly Back Spotface for use with a reverse feed drill having a drill housing and a drill spindle having an axis, which spotface limits the movement of a cutter spindle comprising:

an exterior housing to be attached to the drill housing;

a first spindle attached to the drill spindle;

a spring housing attached to said first spindle;

a central body with means engaging said spring housing to transmit rotational drive and permit relative axial movement between said central body and said spring housing;

a forward housing surrounds said spring housing and is attached to the central body;

a cutter spindle attached to said forward housing;

spring means engaged by said spring housing and by said central body to provide spring biased axial movement between said spring housing and said central body, and

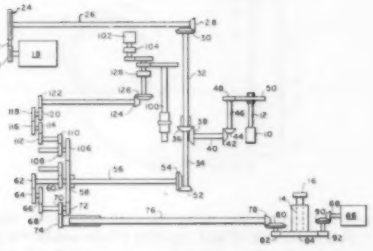
adjustment means attached to said exterior housing to limit the stroke of the cutter spindle where the central body and the spring housing are disposed between said cutter spindle and said adjustment means.

4,435,110

DRIVE TRAIN FOR GEAR HOBBING MACHINE

Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,775
Int. Cl.³ B23F 5/22
U.S. Cl. 409—11 **3 Claims**



1. In a hobbing machine having a drive train for imparting rotation to a work spindle while feeding and rotating a hobbing tool in timed relationship therewith, the improvement characterized by

a final drive system for said work spindle comprising a hypoid pinion mounted to be rotated by a main drive train of the machine, said hypoid pinion being in meshing engagement with a hypoid gear,

a spur pinion carried for rotation with said hypoid gear, said spur pinion being in meshing engagement with a spur gear which is operatively connected to said work spindle to thereby impart rotational movements to the work spindle,

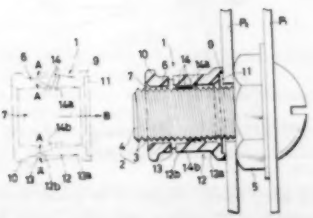
a supplemental driving system having a motor operatively connected to said work spindle for imparting rotation to said work spindle while said hypoid pinion and said hypoid gear maintain accurate positioning of said work spindle relative to said hobbing tool.

4,435,111

NUT

Akira Mizusawa, Fujisawa, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 13, 1981, Ser. No. 282,837
Claims priority, application Japan, Jul. 15, 1980, 55-98744[U]
Int. Cl.³ F16B 37/16
U.S. Cl. 411—437 **3 Claims**



1. A nut molded integrally of a plastic material and adapted

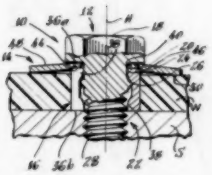
for engagement with a bolt rod, which nut comprises a cylindrical body possessing a receiving hole for admitting the bolt rod in the axial direction and having circumferentially continuous cylindrical end portions at both ends of said body, at least one resilient tab formed in one portion of sayd cylindrical body in such a manner that said at least one resilient tab is integral on one side thereof with said cylindrical body adjacent the receiving end of said body and is flexible in the radial direction of the nut, and partial screw threads formed on the inner surfaces of said at least one resilient tab bordering on said receiving hole and adapted to be meshed with the screw threads on said bolt rod.

4,435,112

FASTENER ASSEMBLY

Philip D. Becker, Southbury, Conn., assignor to Buell Industries, Inc., Waterbury, Conn.

Filed Apr. 9, 1981, Ser. No. 252,385
Int. Cl.³ F16B *43/00*
U.S. Cl. 411—368 **28 Claims**



1. An improved fastener assembly for securing a workpiece to a support, the workpiece having known thickness, a hole therethrough and being subject to plastic deformation; said assembly comprising:

a threaded fastener including a head having a load bearing surface; and a shank projecting from said head generally perpendicularly from said surface and having an unthreaded portion adjacent said head, a radially outwardly protruding annular rib spaced from said surface, and a threaded portion projecting coaxially from said unthreaded portion beyond said rib, said rib having a larger diameter than either the diameter of the crests on the threads of said threaded portion or the diameter of said unthreaded portion;

a sleeve including a generally cylindrical side wall having a split discontinuity therein and circular edges at opposing axial extremes thereof; said sleeve, with said side wall normally collapsed at said discontinuity, defining a normal inside diameter larger than the diameter of said rib and a normal outside diameter smaller than the diameter of the hole in said workpiece; said sleeve further including means forming a radially inwardly projecting constriction adjacent at least one of said edges, confined between said rib and said bearing surface, having a normal diametrical dimension, with said side wall normally collapsed at said discontinuity, less than the diameter of said rib; and

washer means having a hole therein with a diameter greater than the diameter of said rib and less than said normal outside diameter of said sleeve; said washer means being received about said unthreaded portion of said shank and formed on one face thereof with an annular rabbet about said washer hole having a base and a radially inwardly facing cylindrical side wall with a diameter greater than said normal outside diameter of said sleeve, said one edge being received in said rabbet to assemble said sleeve and said washer means together and confine said side wall of said sleeve against spreading, the axial distance between at least a portion of said one face of said washer means and the edge of said sleeve opposite said one edge, when said washer means and sleeve are assembled, being slightly less than the thickness of said workpiece, and the axial distance between the face of said washer means opposite said one face and said contriction forming means when said washer means and sleeve are assembled being less than the axial distance between said load bearing surface and said rib.

24. A method of assembling an improved fastener device that comprises a fastener including a head having a load bearing surface; and a shank projecting from said head generally perpendicularly from said surface and having an upper portion adjacent said head, a radially outwardly protruding annular rib spaced from said head, and an operative portion for securing said assembly to a support projecting coaxially from said upper portion beyond said rib, said rib having a larger diameter than either the diameter of said operative portion or said upper portion; a sleeve including a generally cylindrical side wall having a split discontinuity, circular edges at opposing axial extremes thereof and, with said side wall normally collapsed at said discontinuity, defining a normal inside diameter larger than the diameter of said rib, said sleeve further including means forming a radially inwardly projecting constriction adjacent at least one of said edges having a normal diametrical dimension, with said side wall collapsed at said discontinuity, less than the diameter of said rib; and washer means having a hole therein with a diameter greater than the diameter of said rib and less than said normal outside diameter of said sleeve, said washer means being receivable about said upper portion of said shank and formed on one face thereof with an annular rabbet about said hole having a base and a radially inwardly facing cylindrical side wall with a diameter greater than said normal outside diameter of said sleeve, said one edge being receivable in said rabbet to confine said side wall of said sleeve against spreading, the axial distance between the face of said washer means opposite said one face and said constriction forming means, when said washer means and said sleeve are assembled, being less than the axial distance between said load bearing surface and said rib; said method comprising the steps of:

mounting said washer means on said fastener by placing said shank through said hole in said washer means with said opposite surface of said washer means confronting and adjacent said bearing surface; and

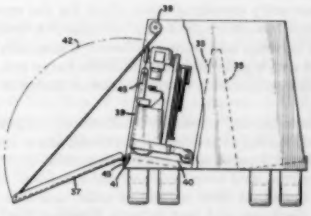
mounting said sleeve in its normal configuration on said fastener and assembling it with said one edge received in said rabbet of said washer means and with said constriction forming means located between said rib and said load bearing surface.

4,435,113

SELF-PROPELLED FREIGHT HANDLING TRUCK

John F. Mosely, Ormond Beach, Fla., and Stephen R. Austin, Winnetka, Ill., assignors to Superior Handling Equipment, Inc., Ormond Beach, Fla.

Filed Aug. 24, 1981, Ser. No. 295,783
Int. Cl.³ B66F *9/08*
U.S. Cl. 414—347 **18 Claims**



9. A self-propelled, collapsible, forklift truck comprising a frame including a pair of parallel vertical rails, wheels mounted on said frame for transporting said truck, lifting forks mounted

on said rails to move upwards and downwards and selectively to be collapsible against said rails, internal combustion power means for generating power to propel said truck and to raise, lower, and tilt said lifting forks, at least one of said wheels being a driving wheel rotated by said power means, two horizontally pivoted legs with a freely rotating wheel at the forward end of each leg telescopically attached to extend or retract longitudinally from each leg, hydraulic power means to pivot said legs and to extend or retract said wheels, and a tiller guiding means attached to said driving wheel for manually guiding said truck, said tiller being selectively collapsible by folding against said frame.

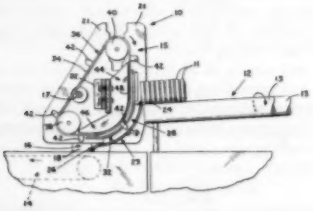
14. A beverage transport system comprising a highway transport truck for transporting interiorly thereof a driver, a plurality of cases of beverage, and a self-propelled beverage handling forklift truck for transporting said cases from said highway transport truck to a delivery destination, said highway transport truck including an interior bay enclosing said self-propelled forklift truck in a collapsed condition, said bay having a pivotable ramp which in its closed position is folded against the side of said highway transport truck and in its open position extends from the floor of said bay to the ground, said self-propelled forklift truck including foldable lifting forks mounted on a wheeled frame supporting a foldable tiller for guiding said forklift truck, and power means for propelling said forklift truck, for raising, lowering, and tilting said lifting forks, and for expanding and narrowing the spacing between the wheels adjacent said lifting forks.

4,435,114

CONTAINER LID SEPARATING ASSEMBLY

Carlos Fardin, Paterson, N.J., assignor to Van Dam Machine Corporation of America, West Paterson, N.J.

Filed Sep. 11, 1981, Ser. No. 301,064
Int. Cl.³ B65G *59/00*
U.S. Cl. 414—330 **12 Claims**



1. A separator assembly for the continuous translational movement of container lids, comprising:

(A) an assembly housing pivotally mounted on a base, said housing comprising parallel vertical walls with their planes in line with the direction of travel of said container lids, and a connecting cross member extending transversely therebetween;

(B) a downwardly extending rigid chute for the reception and passage therethrough of said container lids, said chute mounted between said walls and having a generally vertical infeed end, a generally horizontal discharge end, and a plane rotating, arcuately directed channel disposed therebetween;

(C) said chute having stationary walls comprising at least one broad, partially curvilinear outer wall, and at least one broad, partially curvilinear inner wall parallel and spaced part therefrom, said outer wall and said inner wall cooperating to define, at their respective ends, said infeed end and said discharge end, and defining between their broad surfaces, said arcuately-directed channel; and

(D) movable lid advancing means supported by said walls and said cross member, having a portion thereof extending into said chute and traveling through the entire length of said chute, cooperating with said chute to urge said container lids downwardly therethrough;

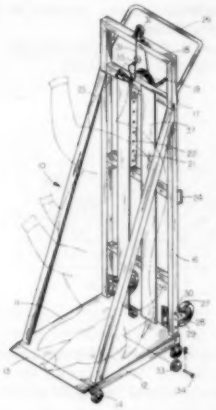
wherein the vertical attitude of said chute and said lid advancing means is incrementally adjustable to accommodate variations in container lid design.

4,435,115

DOLLY FOR LIFTING AND CARRYING DEAD SOWS AND THE LIKE

Russell D. Orstad, and Durwood D. Orstad, both of Rte. 2, Villisca, Iowa 50864

Filed Aug. 19, 1981, Ser. No. 294,271
Int. Cl.³ B62B *1/06*
U.S. Cl. 414—490 **9 Claims**



1. A dolly for lifting and carrying dead sows and the like in a confined space, comprising:

a substantially square platform supported by ground engaging wheels;

a rectangular vertical back attached at one of its narrow edges to an edge of the platform;

a means affixed to the vertical back for pulling a cable towards the upper end of the vertical back;

a cable attached at one end to a means for temporary attachment to a leg of a dead sow and at its second end to the cable pulling means; and

an operably removable means affixed to the dolly near the adjoinment of the platform and the vertical back for temporarily directing the path of the cable in a horizontal direction along the platform towards the adjoinment of the platform and the vertical back and then in a vertical direction along the vertical back, whereby a dead sow can be pulled onto the platform substantially to the point of adjoinment and then lifted upwards along the vertical back.

4,435,116

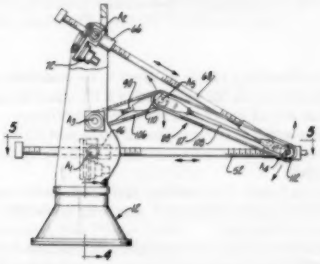
ROBOTIC MANIPULATOR

Walter H. Van Deberg, 1829 Kipling Ave., Berkley, Mich. 48072

Filed May 27, 1982, Ser. No. 382,706
Int. Cl.³ B06C *23/00*
U.S. Cl. 414—728 **22 Claims**

1. A robotic manipulator comprising a support frame, a pair of laterally spaced, parallel screws rigidly interconnected at their front ends; a rigid support bracket journalled on said frame for rotation about a generally horizontal first axis; a pair of laterally spaced nuts rotatably supported on said bracket in threaded engagement with said screws; drive means on said bracket for rotating said nuts simultaneously at the same rate

and in either direction so as to extend and retract the interconnected screws as a unit; a second support bracket journalled on said frame for rotation about a second axis spaced from and parallel to said first axis; a third screw; means pivotally connecting the front end of the third screw with the connected front ends of the first-mentioned screws; a nut journalled on the second bracket in threaded engagement with the third screw; drive means on the second bracket for rotating the last-mentioned nut in either direction to extend and retract the third screw, said two drive means being operable to rotate their respective nuts in relation to each other to displace the interconnected ends of the three screws along a programmed path in a vertical plane, and a work member supported adjacent the connected forward ends of said screws, said frame and said screws defining a vertically disposed, rigid triangular truss having one side of fixed length corresponding to the distance on said frame between said two axes and the two remaining sides being of variable length and connected adjacent said work member.



13. A robotic manipulator comprising a support frame; a pair of laterally spaced, parallel screws rigidly interconnected at their front and rear ends in laterally spaced parallel relation; a rigid support bracket journalled on said frame for rotation about a generally horizontal first axis; a pair of laterally spaced nuts rotatably supported on said bracket in threaded engagement with said screws, drive means on said bracket for rotating said nuts simultaneously at the same rate and in either direction so as to extend and retract the interconnected screws as a unit; a work member supported at the connected forward ends of said screws; a flexible tension member anchored at one end to and extending rearwardly and upwardly from the connected forward ends of said screws, a circular member journalled on said frame at a second axis above and parallel to said first axis, said flexible member extending around said circular member; and motor means on said frame connected with said flexible member for lengthening and shortening the portion thereof extending between the circular member and said anchored end.

4,435,117

LIFT TRUCK PAPER ROLL CLAMP HAVING AUTOMATICALLY ADJUSTABLE ROLL OF DIFFERENT DIAMETERS

Marshall K. House, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Feb. 1, 1982, Ser. No. 344,796

Int. Cl.³ B66F 9/18

U.S. Cl. 414—620 **13 Claims**

1. A load-handling clamp adapted to be mounted upon the lifting apparatus at the forward end of a lift truck for engaging a cylindrical load such as a roll of paper and the like, comprising:

(a) a frame adapted to be mounted upon said lifting apparatus so as to be selectively movable vertically by said lifting apparatus;

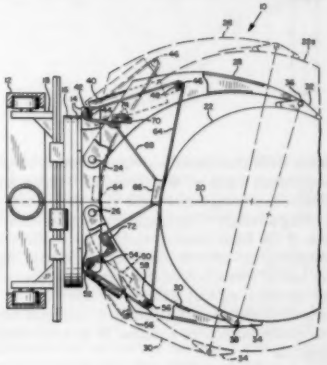
(b) a pair of selectively openable and closable opposing clamp arms mounted upon said frame projecting therefrom in a forward direction, each of said clamp arms having a forward tip for engaging a load;

(c) means movably connecting each of said clamp arms to said frame for permitting each of said clamp arms to move with respect to said frame selectively toward and away from the other of said clamp arms;

(d) clamp arm power means connecting said clamp arms with said frame for selectively moving each of said clamp arms with respect to said frame toward and away from the other of said clamp arms;

(e) a load positioner comprising an elongate member extending between said clamp arms generally transversely to said forward direction and having a pair of extremities, each of said extremities being located adjacent a respective one of said clamp arms; and

(f) respective means adjacent each of said extremities for



selectively moving each respective extremity forwardly with respect to said frame automatically in response to movement of the respective adjacent clamp arm toward the other one of said clamp arms, and for moving each respective extremity rearwardly with respect to said frame automatically in response to movement of the respective adjacent clamp arm away from the other one of said clamp arms, said respective means including means for moving said elongate member to different positions, automatically variably dependent upon the relative positions of said clamp arms with respect to each other, for forcibly abutting a cylindrical load located between the forward tips of said clamp arms prior to the engagement of said load by said tips and, by such abutment, ensuring that said tips are in substantially diametrically opposed relation to said load when said tips are separated by a distance substantially equal to the diameter of said load.

4,435,118

METHOD OF CONTROLLING HORIZONTAL MOTION OF A LOAD APPLICATION POINT ON AN ARTICULATED CRANE

Volkmar Behrend, Bad Schwartau, and Eckhard Röder, Lübeck, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 5, 1983, Ser. No. 482,001

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3213332

Int. Cl.³ B66C 23/00, 23/52

U.S. Cl. 414—744 R **15 Claims**

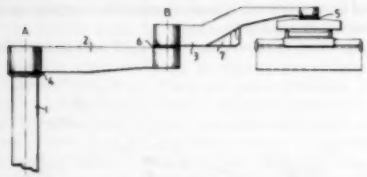
1. A method of controlling horizontal motion of a load application point on an articulated crane having a base member, a head member of substantially equal length L as the base member, the base member being connected at one of its ends to a crane post through a sluing gear for rotation on an axis A and

at another end thereof to one end of the head member through another sluing gear rotating on a common axis of rotation B of the base and head members, the head member carrying the load application point on another end thereof, comprising:

determining an angle β formed between the base member and a longitudinal axis of the head member;

presetting a desired moving direction value v for the load application point by means of a drive direction selector of a drive direction indicator provided on the head member;

readjusting the desired moving direction value by small increments toward a desired target for the load application point;



forming from the desired moving direction value a head axis component value v_1 which equals v cos α and a perpendicular axis component value v_2 which equals v sin α, with α being an angle of misalignment between the longitudinal axis of the head member and the drive direction selector;

determining the pivotal speed n_A of the base member about the axis of rotation A on the crane post in accordance with the equation $n_A = v_1/2L\pi \sin \beta$; and

determining the pivotal speed n_B of the head member about the common axis of rotation B in accordance with the equation

$$n_B = -2n_A \sin^2 \frac{\beta}{2} \pm \frac{v_2}{2\pi L}.$$

8. A device for controlling horizontal motion of a load application point on an articulated crane having a crane post, a base member pivotally mounted on the crane post about a first axis A, and a head member pivotally mounted to an end of the base member about a second axis B between an angle β of from 0° to 360° with respect to the base member and of a length L substantially the same as that of the base member, the head member carrying the load application point at an outer end thereof, comprising:

a direction indicator on the base member for indicating directions toward which the load application point can be moved;

a direction selector movably mounted on the direction indicator for movement toward a desired direction v for the load application point;

an angle sensor associated with the second axis B for detecting the angle β;

direction component calculation means associated with said direction indicator and direction selector for calculating a first component v_1 of the desired direction along a major axis of the head member, which first component equal v cos α, and a second direction component v_2 perpendicular to the first component which is equal to v sin α, where α is equal to a misalignment angle between the longitudinal axis of the head member and the desired direction v of the direction indicator;

first pivotal speed calculating means for calculating the pivotal speed n_A of the base member about the first axis A which is equal to $v_1/2L\pi \sin \beta$; and

second pivotal speed calculation means for calculating the pivotal speed n_B of relative rotation between the head member and base member about the second axis B which is equal to $-2\ n_A \sin^2 \beta/2 \pm v_2/2\pi L$.

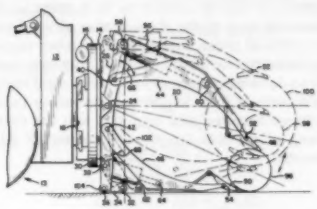
4,435,119
LIFT TRUCK LOAD CLAMP HAVING POWER-ACTUATED PIVOTAL SUBFRAME FOR HANDLING PAPER ROLLS

Marshall K. House, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Nov. 16, 1981, Ser. No. 321,921

Int. Cl.³ B66F 9/18

U.S. Cl. 414—620 **17 Claims**



10. A load-handling clamp adapted to be mounted upon the lifting apparatus at the forward end of a lift truck for engaging a cylindrical roll of paper and the like, comprising:

(a) a frame adapted to be mounted upon said lifting apparatus so as to be selectively movable vertically by said lifting apparatus;

(b) rotating means for rotating said frame with respect to said lifting apparatus about a generally forwardly-extending axis of rotation;

(c) a subframe and first pivotal connection means connecting said subframe to said frame for permitting said subframe to pivot with respect to said frame about a first pivot axis extending transverse to said forwardly-extending axis of rotation;

(d) first and second selectively openable and closeable opposing clamp arms mounted upon said subframe projecting therefrom in a forward direction;

(e) second pivotal connection means connecting said first clamp arm to said subframe for permitting said first clamp arm to pivot with respect to said subframe about a second pivot axis transverse to said forwardly-extending axis of rotation, and third pivotal connection means connecting said second clamp arm to said subframe for permitting said second clamp arm to pivot with respect to said subframe about a third pivot axis extending transverse to said forwardly-extending axis of rotation;

(f) said second and third pivot axes being spaced apart in a direction transverse to said forwardly-extending axis of rotation and said first pivot axis being located between said second and third pivot axes; and

(g) power means connected to said frame at a first location and connected to said subframe at a second location for selectively pivoting said subframe with respect to said frame about said first pivot axis, said second location being positioned at least as far forwardly as said first pivot axis.

4,435,120
ARM FOR A PROGRAMME CONTROLLED MANIPULATOR

Junichi Ikeda, Tokyo; Iwao Ohtani, Inagi; Noriyuki Utsumi, Yokohama, and Shinichi Nojima, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Mar. 2, 1982, Ser. No. 354,048

Claims priority, application Japan, Mar. 17, 1981, 56-38093[U]

Int. Cl.³ B66C 23/00

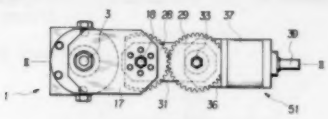
U.S. Cl. 414—735 **9 Claims**

1. A manipulator arm comprising:

a base member,

a stationary gear secured to the base member,

a first movable gear meshing with the stationary gear,
a connecting member secured at one end thereof with the first movable gear,
a first rotational shaft rotatably mounted on the other end of the connecting member,
a second movable gear secured to the rotational shaft,



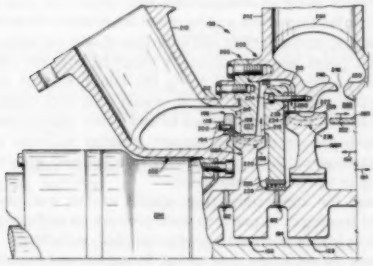
a third movable gear meshing with the second movable gear,
a second rotational shaft secured with the third movable gear and passing through the first movable gear,
a working tool attached to the second movable gear, and
a driving means for causing the first movable gear to move while meshing it with the stationary gear.

4,435,121

TURBINES

Leon R. Wosika, El Paso, Tex., assignor to Solar Turbines Incorporated, San Diego, Calif.

Continuation of Ser. No. 79,584, Sep. 27, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,394
Int. Cl.³ F01D 1/16
U.S. Cl. 415—56 **7 Claims**



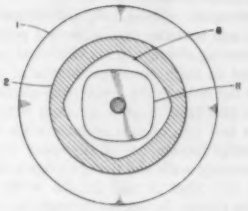
2. A full admission radial impulse turbine comprising: a wheel having buckets formed around and opening onto the periphery thereof, means mounting said wheel for rotation about an axis corresponding to the axial centerline of the turbine, and means for introducing a working fluid into said buckets which comprises nozzles spaced around the periphery of said wheel and oriented to discharge the working fluid therefrom into said buckets, the means for introducing working fluid into said buckets also including vanes alternating with and determining the contours of said nozzles, said vanes having surfaces facing the axial centerline of the turbine which are continuously curved from a first location corresponding to the exit from each nozzle to a second location corresponding to the trailing edge of the adjacent nozzle and the angle of divergence at those edges of the vanes corresponding to the exits of the nozzles being a maximum of ca. 3°, said turbine also having a discharge plenum on the downstream side of said wheel and the buckets formed in said wheel being so configured as to dump the working fluid into said discharge plenum after that fluid has passed through a single bucket.

4,435,122

METHOD AND APPARATUS FOR PUMPING FIBER SUSPENSIONS

Toivo Niskanen, Hamina; Frey Sundman, and Jorma Tuomaala, both of Karhula, all of Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Continuation-in-part of Ser. No. 903,494, May 8, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,427
Claims priority, application Finland, May 16, 1977, 771541
Int. Cl.³ F04D 1/04
U.S. Cl. 415—121 B **2 Claims**



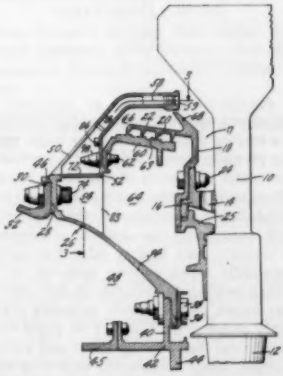
1. A method of fluidizing and pumping a fiber suspension with a centrifugal pump in the fluidized state; said pump having an inlet which has a conduit; a housing, an impeller with vanes, an outlet and a non-round rotor which is located in the inlet of the pump, the inlet having recesses on its surface, which comprises feeding said fiber suspension into the conduit of the inlet; causing the rotor to rotate, bringing the fiber suspension into rotating motion in the inlet of the pump, said rotating motion having alternate flow components towards and away from the rotation axis of the rotor whereby shear forces are generated in the inlet of the pump which disrupt the fiber-to-fiber bonds whereby the fiber suspension is fludized, becomes pumpable and flows to the impeller in a fluidized state.

4,435,123

COOLING SYSTEM FOR TURBINES

Richard Levine, Bloomfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,700
Int. Cl.³ F01D 5/18
U.S. Cl. 416—95 **6 Claims**



1. A cooling structure for supplying cooling air to a chamber at a face of a turbine disk the structure being a single unitary case article including:

spaced annular walls defining an air flow chamber and ter-

minating at one end in an axially positioned discharge nozzle having vanes therein extending between the walls and integral therewith;

an annular connecting element integral with and connecting said walls at the ends remote from the nozzle, said element extending from said walls and having mounting means on the end remote from the wall;

radially extending partitions integral with extending between and connecting the spaced walls and defining circumferentially spaced flow passages for air from said connecting element to the nozzle, the element having air inlet holes therein;

an interrupted substantially cylindrical partition integral with and between said walls at a point spaced from said connecting element, said cylindrical partition being interrupted to form openings therein at points in alignment with the holes in the connecting element for a flow of air from said holes to said openings between selected partitions and one of said annular walls having first access openings therein out of alignment with the holes in the connecting walls and the openings in the cylindrical partition, the other of said annular walls having attachment means therein for access through the openings in said one of said annular walls.

4,435,124

VERTICAL AXIS WINDMILL

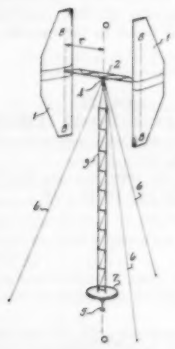
Yea K. Zheng, Nanking, China, assignor to Nianbilla Company Limited, Hong Kong, China

Filed Aug. 20, 1981, Ser. No. 294,785

Claims priority, application United Kingdom, Aug. 20, 1980, 8027111

Int. Cl.³ F03D 7/06

U.S. Cl. 416—119 **7 Claims**



1. A vertical axis windmill having at least one blade of airfoil form with a leading edge and a trailing edge, each said blade being freely pivotally connected about a vertical axis passing through the center of gravity of said blade to support means rotatable about an axis by the action of the wind on said blades, each said blade being constructed so that said vertical axis lies closer to said leading edge than does the aerodynamic center of said blade whereby said leading edge automatically swings radially outwardly when moving upstream of, and radially inwardly when moving downstream of, said axis of rotation of said support means, said windmill including regulator means for adjustably defining the limits of an angle through which each said blade can freely swing about said vertical axis, said regulator means being constructed such that said angle decreases with increasing speed of rotation of said support means and so controls the speed of rotation of the windmill, said windmill further including means for releasing said blades from the control of said regulator means and allowing said blades to feather in the event of excessive wind speeds.

4,435,125

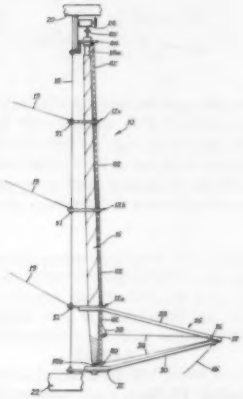
WIND TURBINE SPINDLE ASSEMBLY WITH SPINDLE CONSTRAINT

Gregory E. Cook, Warrenville, Ill., assignor to Windpowered Machines Ltd., Livingston, Mont.

Filed May 20, 1981, Ser. No. 265,617

Int. Cl.³ F03D 11/04

U.S. Cl. 416—132 B **38 Claims**



1. An anti-bowing spindle constraint assembly for a wind turbine having a wheel with an axle suspended from a rim, said axle having a hub, an elongate spindle mounted radially between said hub and said rim in a manner minimizing force loading thereof along its elongate axis, said spindle carrying a soft airfoil furled thereabout and mounted for rotation about its elongate axis to permit furling and unfurling of said soft airfoil, an elongate boom assembly pivotally mounted adjacent said rim for supporting at a point along the length thereof the unfurled clew portion of said airfoil spaced from said spindle and for changing the angle of attack of said airfoil with respect to the wind, and an elongate support member mounted in tension between said hub and said rim adjacent said spindle, comprising in operative combination:

(a) means for constraining the spindle against excessive lateral bowing in response to wind pressure on said airfoil when at least a portion thereof is unfurled, including:

(b) means for receiving said airfoil furled on said spindle disposed intermediate said rim and said hub,

(i) said receiving means defining a space permitting freely winding or unwinding said airfoil from said spindle upon rotation of said spindle about its elongate axis, and

(ii) said receiving means providing a slot communicating with said space for passage therethrough of said airfoil upon furling or unfurling of said airfoil;

(c) means for transmitting lateral pressure from said spindle to said receiving means mounted to said receiving means adjacent said slot;

(d) means for reducing friction on said airfoil as it passes through said slot mounted in engagement with said airfoil and in association with said pressure-transmitting means;

(e) means for mounting said receiving means to said support means at a position radially outwardly from the hub end of said spindle to transfer at least a portion of said lateral bowing pressure on said spindle to said support means while permitting free axial rotation of said spindle for furling and unfurling of said airfoil, and permitting pivoting of said boom through an angle for change of said angle of attack of said airfoil.

4,435,126
CENTRIFUGAL PUMP IMPELLER WITH REPLACEABLE WEAR RING

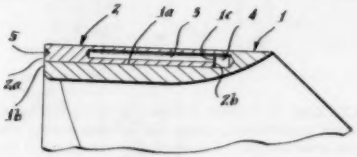
Wolfgang Schneider, Weisenheim, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,190

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011675

Int. Cl.³ F04D *29/22*

U.S. Cl. 416—186 R **10 Claims**



1. An impeller for use in centrifugal pumps, particularly in pumps for effecting forced circulation of fluids in primary circuits of nuclear power plants, comprising an impeller body having a peripheral surface; and a wear ring adapted to be readily removed from said impeller body, said ring surrounding said surface and having an exposed end face, a second end face, a plurality of elongated axially parallel sockets provided in said second end face and extending toward said first end face, and indices provided on said first end face in axial alignment with said sockets so that a material removing tool, such as a drill, can be caused to penetrate into said sockets by placing it into register with such sockets with the aid from the respective indices for ready removal of said wear ring from said impeller body.

4,435,127
APPARATUS WITH LATCHING EFFECT FOR LIMITING PRESSURE IN LIQUID FEEDING SYSTEMS

Josef Kränzle, Auerstrasse 42, 7918 Illertissen, and Lutz Droitsch, Bussardweg 25, 4800 Bielefeld, both of Fed. Rep. of Germany

Filed Aug. 12, 1981, Ser. No. 292,125

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037259

Int. Cl.³ F04B *49/08*

U.S. Cl. 417—26 **9 Claims**

1. A valve system for use in a liquid feeding system in which in operation liquid is fed by an electric pump to a delivery means, said valve system comprising:

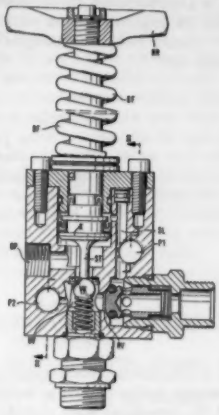
a main outlet, a check valve, and an inlet connectable via a said valve to said main outlet,

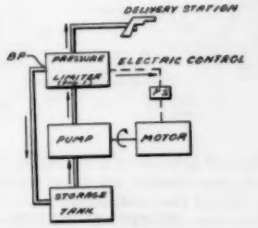
a bypass valve and a bypass outlet connectable to said inlet via said bypass valve which opens in response to a sudden increase in pressure at said main outlet,

a first pressure switch in communication with said main outlet and settable to either a first condition or to a second condition when the pressure applied to said first pressure switch is less than or exceeds a predetermined threshold value respectively,

a second pressure switch in communication with said inlet and settable to either a first condition or to a second condition when the pressure applied to said second switch is less than or exceeds a predetermined threshold value respectively,

said first and second pressure switches being connected together in such a manner than when the pressure switches are both in said first condition or are both in said second condition a switch on path for said pump is closed enabling operation of the pump, the arrangement further being such that when said bypass valve is opened by said sudden pressure increase said second pressure switch is switched from its second condition to its first condition





for switching off said pump by opening the associated switch on path.

4,435,128
APPARATUS FOR ASCERTAINING A PREDETERMINED ROTARY POSITION OF A ROTATIONAL BODY

Hansjörg Frey; Heinrich Hampel; Rolf Müller; Ernst Ritter, and Reinhard Schwartz, all of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,399

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127048

Int. Cl.³ F04B *21/00, 51/00*

U.S. Cl. 417—63 **12 Claims**

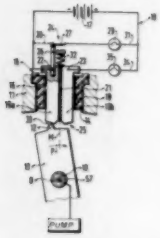
1. An apparatus for ascertaining a predetermined rotary position of a rotational body mounted to a housing, such as the supply onset position of the drive shaft of a fuel injection pump for an internal combustion engine, comprising:

angle indication marking means fixedly connected to the rotational body for rotation therewith; and

signal transducer means, including: a transducer housing fixedly secured to the rotational body housing; a rough indication circuit having a first contact switch; a precise indication circuit having a second contact switch and a rotary position signal means; and a transducer body displaceably guided in the transducer housing in a direction approximately radial with respect to the axis of rotation of the rotational body, wherein:

(i) the transducer body partly defines the second contact switch;

(ii) at a predetermined rotary position of the rotational body, the angle indication marking means trigger the first contact switch to energize the rough indication circuit; and



(iii) at a subsequent predetermined rotary position of the rotational body, the angle indication marking means and the transducer body complete the second contact switch to energize the rotary position signal means of the precise indication circuit.

4,435,129

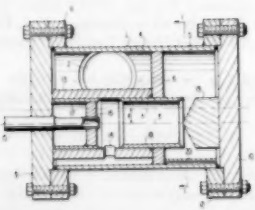
VORTEX INJECTOR

Gyorgy Mika, 9/A, Szajko utca, 1021 Budapest; Denes Csako, 6 Budakeszi ut, 1121 Budapest; Laszlo Paczuk, 93, Beke ut, 6131 Szank; Laszlo Beres-Deak, Tallya u. 8-10, 1121 Budapest, and Laszlo Novotny, Bimbo u. 3, 1022 Budapest, all of Hungary

Continuation-in-part of Ser. No. 22,046, Mar. 19, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,634

Int. Cl.³ F04F *5/00*

U.S. Cl. 417—151 **8 Claims**



1. A vortex injector comprising a cylindrical casing, means for introducing a high pressure gas into the cylindrical casing, means for introducing a low pressure gas into the casing parallel but eccentrically to the axis of the casing, means for mixing together the low and high pressure gases, means for discharging from the casing the mixed low and high pressure gases at an intermediate pressure, said discharge means being disposed tangentially of the casing, and a partially cylindrical plate forming with said discharge means a helical scroll for gases leaving said chamber.

4,435,130

HYDRAULIC PLANETARY PISTON ENGINE HAVING FREE WHEELING VALVE

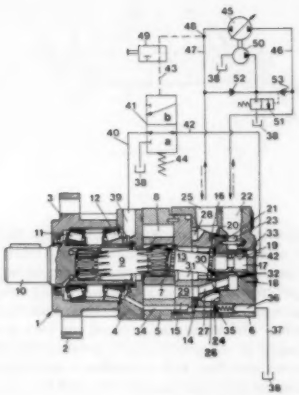
Carl V. Ohrberg, and Gunnar L. Hansen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jul. 29, 1981, Ser. No. 288,039

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3029997

Int. Cl.³ F04B *49/08*; **F04C** *1/06*

U.S. Cl. 417—310 **4 Claims**



1. A hydraulic planetary piston engine, comprising, an externally serrated pinion gear with a splined bore and an internally serrated ring gear in mesh therewith, drive side and valve side housing means attached to opposite sides of said ring gear, said housing means defining inlet and outlet ports, drive means rotatably mounted in said drive side housing means, first cardan shaft means connecting said drive means to said pinion gear, valve means in said valve side housing means including a fixed annularly shaped plate valve member attached to said ring gear and a rotatable annularly shaped plate valve member in sealing engagement therewith, second cardan shaft means connecting said rotatable valve member to said pinion gear, a confined interior chamber defined by said drive side housing and said valve means in conjunction with said pinion gear bore, piston means having inner and outer pressure areas on opposite inner and outer axial sides thereof having respective fluid communication with said inlet and outlet ports, said piston means being in bisable engagement with said rotatable valve member, said piston means having inner and outer pressure faces with said inner face being (face thereof) in fluid communication with said confined interior chamber, passage means externally of said housing means for connecting said confined interior chamber to said outer pressure face of said pressure piston means, changeover valve means in said passage means having a first position placing said confined interior chamber and said outer pressure face in fluid communication to bias said rotatable valve member into sealing engagement with said fixed valve member and a second position connecting said outer pressure face to atmosphere to effect a releasing of said sealing engagement between said valve members.

4,435,131

LINEAR FLUID HANDLING, ROTARY DRIVE, MECHANISM

Zorro Ruben, 8923 Bronx, Skokie, Ill. 60077

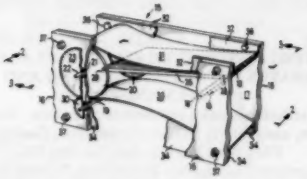
Filed Nov. 23, 1981, Ser. No. 324,030

Int. Cl.³ F04B *19/00*

U.S. Cl. 417—334 **23 Claims**

1. In a fluid energy machine including at least one fluid

engaging vane having substantially parallel side edges, said vane and side edges extending generally in a longitudinal direction while executing an alternating pivotal motion about said vane's longitudinal ends, and receiving or imparting motion to a fluid, the improvement in support means for each vane com-



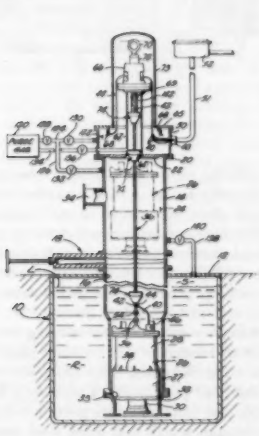
prising means cohstraining one end portion of each vane to substantially rotary motion and means constraining the other end portion of each vane to substantially reciprocation motion along lines of reciprocation which cross said longitudinal direction obliquely.

4,435,132

SUBMERSIBLE PUMPING SYSTEM

William G. Haesloop, Dana Point; Melvin S. Mann, Newport Beach, and James W. Jones, Pico Rivera, all of Calif., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 195,514, Oct. 9, 1980. This application Mar. 14, 1983, Ser. No. 475,463
Int. Cl.³ F04B *35/00*; B67D *5/40*
U.S. Cl. 417—360 **12 Claims**



1. A group of interrelated pumping system components especially adapted to be assembled together for use in a pumping system including a fluid transmitting casing passing through the roof of a reservoir comprising:

a pump and motor unit adapted to be lowered through said casing to the lower end thereof for pumping fluid upwardly through said casing;

valve means adapted to be installed on an upper portion of said casing for opening and closing said casing, said valve means having an opening therein of such a size that when the valve is open, said pump and motor unit may be passed through said opening;

a head plate adapted to be mounted on the top of said casing, said head plate having a hole therein;

a vertical pipe mounted on said head plate aligned with said hole;

a flexible lift cable and flexible electrical conductors adapted to be connected to said pump and motor unit and to pass upwardly through said valve opening, said hole in said head plate and said pipe;

a plurality of combined clamping and sealing elements connected to said lift cable and conductors at spaced intervals, said elements having a close substantially sealing fit with said pipe when passed therethrough; and

said elements being spaced apart a distance less than the length of said pipe whereby when said valve means is open and said lift cable is raised to lift said pump and motor unit through said casing above said valve means, one element will enter the lower end of said pipe before the next adjacent upper element exits from the upper end of said pipe so that the pipe, and hence the casing, will be continuously blocked to minimize venting of the casing to atmosphere when said valve means is open.

4,435,133

FREE PISTON ENGINE PUMP WITH ENERGY RATE SMOOTHING

John W. Meulendyk, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Oct. 17, 1977, Ser. No. 842,494
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—364 **32 Claims**

1. A free piston engine pump comprising hydraulic pump means including plural piston and cylinder areas of different effective areas adapted to be simultaneously linearly driven by such engine to generate different hydraulic work rates during the engine power stroke, means for phasing such different hydraulic work rates at different points during the power stroke to provide plural levels of hydraulic output work in order to smooth out the hydraulic energy or work rate of said free piston engine, and means for supplying hydraulic energy to said plural piston and cylinder areas at different points during the return stroke to achieve optimum return stroke timing to accelerate the return movement of said hydraulic pump means during the return stroke.

4,435,134

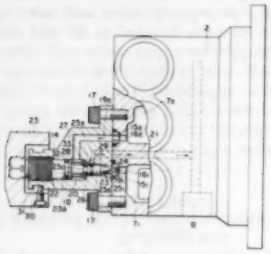
FLOW CONTROL VALVE

Akio Okada, 11-19, Tsudanuma 2-chome, Narashino-shi, Chiba-ken; Tokifumi Nakata, 14-8, Nishitsuga 3-chome, Chiba-shi, Chiba-ken, and Kiyoshi Nemoto, 2290-2, Kikuma, Ichihara-shi, Chiba-ken, all of Japan

Filed Jun. 22, 1982, Ser. No. 390,833
Int. Cl.³ F04B *23/06, 41/06*
U.S. Cl. 417—428 **5 Claims**

1. A flow rate control valve for a multiple cylinder type reciprocating pump, said control valve comprising, in combination, a body member of the control valve including a first duct communicating with a first passage on the discharge side of one cylinder, a second duct communicating with a second passage on the discharge side of another cylinder, said first and second passages being distinct from discharge ports for said cylinders, a double stepped cylinder chamber extending through the length of said body member with the forward opening end of the chamber defining said first duct, said cylinder chamber communicating with said second duct at back of a second rearward step, and a bypass passage communicating with said cylinder chamber at back of said first step and with

a suction port of the pump; a needle valve extending into said cylinder chamber adjustably and reciprocably into a position normally abutting on said first step to interrupt fluid communication between said first duct and said bypass passage; and a valving member slidably fitted on said needle valve and spring-biased to normally abut on said second step to interrupt fluid communication between said second duct and said bypass



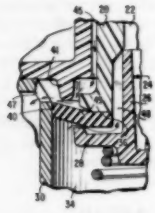
passage; wherein said first step is first freed from the needle valve upon rearward displacement of said needle valve to establish fluid communication between said first duct and said bypass passage and thereafter said valving member is acted upon by a projection secured to said needle valve to free said second step from said valving member to establish fluid communication between said second duct and said bypass passage.

4,435,135

PUMP ASSEMBLY WITH IMPROVED SEAL

Michael G. Knickerbocker, Crystal Lake, Ill., assignor to Sequist Valve Company, Cary, Ill.

Filed Apr. 3, 1981, Ser. No. 250,573
Int. Cl.³ F04B *21/04, 39/10*
U.S. Cl. 417—511 **9 Claims**



1. A hand-actuatable pump assembly adapted to be sealingly secured to the mouth of a container for dispensing material in the container, comprising:

a generally tubular adapter defining a discharge passageway,

a spray member seated on said adapter and defining a discharge opening in communication with said passageway,

a stem defining a portion secured to said adapter,

a valve body defining a pressure chamber, and

a piston having flat top and bottom surfaces sealingly and slidably engaging the wall of said valve body,

spring means biasing said stem upwardly,

said piston comprising a first portion clamped between confronting surfaces of said stem and said adapter, and a second deflectable portion in sealing engagement with said stem in a position of rest and being out of sealing engagement in a second position of actuation, said deflectable portion confronting a relieved portion of said adapter accommodating flexure of said deflectable portion of said piston,

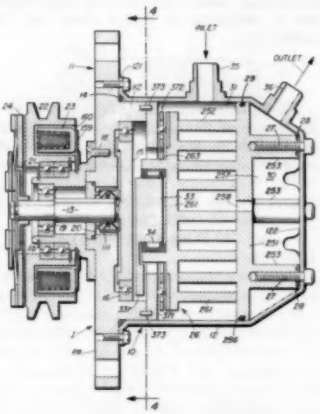
said deflectable portion of said piston being deflectable in response to hydraulic pressure upon movement of said piston downwardly into said valve body to expose said passageway to communication with said pressure chamber, whereby when said deflectable portion is deflected, said clamped portion remains clamped between said confronting surfaces of said stem and said adapter.

4,435,136

ORBITING PISTON TYPE FLUID DISPLACEMENT APPARATUS WITH SHAFT BEARING AND SEAL MECHANISMS

Kiyoshi Terauchi, Isesaki, and Seiichi Sakamoto, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed May 5, 1981, Ser. No. 260,756
Claims priority, application Japan, May 7, 1980, 55-59460
Int. Cl.³ F01C *1/02, 19/12, 21/02*
U.S. Cl. 418—55 **8 Claims**



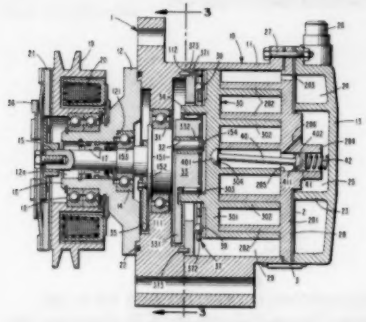
1. In an orbiting piston type fluid displacement apparatus including a housing having a front end plate member, a fixed member fixedly disposed relative to said housing, an orbiting piston member disposed within said housing and interfitting with said fixed member to make it least one line contact to define a sealed off fluid pocket, and a drive shaft which penetrates said front end plate member and is rotatably supported by said front end plate member through two bearings, said drive shaft being connected to said orbiting piston member to effect the orbital motion of said orbiting piston member, the improvement comprising said front end plate member including a front end plate portion and a separately formed annular sleeve portion, said front end plate portion being formed with an opening through which said drive shaft extends, and said annular sleeve portion being fixed to and extending from a front end surface of said front end plate portion for surrounding said drive shaft, said front end plate portion having a major dimension transverse to the axis of said drive shaft and a minor dimension along the axis of said drive shaft with said major dimension being substantially greater than said minor dimension, said annular sleeve portion having a hollow space which forms a continuation of the opening formed in said front end plate portion, a shaft seal assembly assembled on said drive shaft within said opening in said front end plate portion, said drive shaft being rotatably supported by said two bearings, which are disposed within said housing, and one of said bearings being disposed axially outward of said shaft seal assembly in said separate annular sleeve portion and the other of said bearings being disposed inward of said shaft seal assembly in said front end plate portion.

4,435,137

SCROLL-TYPE FLUID COMPRESSOR WITH SCROLL STABILIZING MECHANISM

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Mar. 31, 1981, Ser. No. 249,657
Claims priority, application Japan, Apr. 5, 1980, 55-44073
Int. Cl.³ F04C *18/02*; F16D *3/04*
U.S. Cl. 418—55 **10 Claims**



1. In a scroll-type fluid compressor including a housing havibng a fluid inlet port and a fluid outlet port, a fixed scroll member fixedly disposed within said housing and having first end plate means from which first wrap means extend, an orbiting scroll member having second end plate means from which second wrap means extend and said first and second wrap means interfitting at an angular offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, a drive shaft rotatably supported by said housing, a drive pin eccentrically disposed with respect to the axis of the drive shaft at an iner end of said drive shaft and connected to said orbiting scroll member for transmitting orbiting movement, and a rotation preventing means for preventing the rotation of said orbiting scroll member during the orbital motion of said orbiting scroll member, whereby said fluid pockets change volume by the orbital motion of said orbiting scroll member and merge with a central high pressure fluid space, the improvement comprising thrust supporting means engaged with the side of said second end plate means opposite to the side thereof from which said second wrap means extend, for providing axial thrust support to said orbiting scroll member, and axial pushing means including a separate pushing member, located generally centrally of said scroll members in said high pressure fluid space, in engagement with said orbiting scroll member generally at the center thereof for mechanically pushing said orbiting scroll member against said thrust supporting means from the side of said orbiting scroll member which faces said fixed scroll member, to minimize axial slant of sai orbiting scroll member.

4,435,138

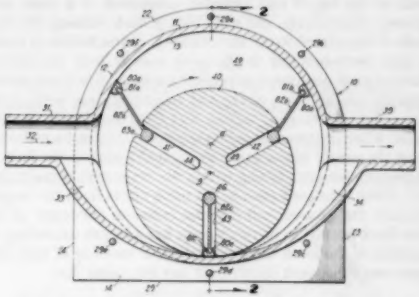
ROTARY VANE MACHINE WITH ROTATING END SEALING PLATES

Howard B. Johnson, Rte. 2, Box 172C, Adairsville, Ga. 30103

Filed Oct. 20, 1980, Ser. No. 196,853
Int. Cl.³ F01C *1/00, 19/00, 19/08*
U.S. Cl. 418—131 **10 Claims**

1. A rotary vane machine of the type having a housing with end plates and a body therebetween having a peripheral inner surface concentric about a transverse axis and defining an interior, an inlet means communicating with said interior for conducting fluid into said interior, an outlet means communicating with said interior at a point spaced circumferentially from said inlet means with respect to said inner surface for conducting fluid from said interior, a rotor eccentrically mounted in said interior for rotation about a second transverse axis parallel to said first axis, said rotor being provided with circumferentially spaced vane receiving slots therein and vanes received respectively in said slots, said vanes being movable in said slots and extending outwardly therefrom, wherein the improvement comprises:

(a) a pair of opposed sealing plates disposed respectively between one of said end plates and the end of said rotor,



each of said sealing plates having a larger radial dimension than said rotor for seating with fluid pressure against the inner surface of said one of said end plates to retard leakage of fluid therebetween; and

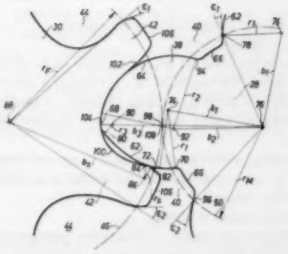
(b) circumferentially spaced wiper bars connected to and extending between said plates and riding against said peripheral inner surface and connected to the outer ends of said vanes.

4,435,139

SCREW ROTOR MACHINE AND ROTOR PROFILE THEREFOR

Ake Astberg, Nacka, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Feb. 3, 1982, Ser. No. 345,230
Claims priority, application United Kingdom, Feb. 6, 1981, 8103739
Int. Cl.³ F01C *1/16*
U.S. Cl. 418—201 **51 Claims**



1. Screw rotor machine for a working fluid comprising a casing with a working space provided with spaced apart low pressure and high pressure ports for communication with low pressure and high pressure channels, respectively, and including at least two intersecting bores with parallel axes, a number of rotors disposed in said bores and intermeshing in pairs, each rotor having helical lands and intervening grooves, whereby a pair of communicating groove portions form a chevron-shaped chamber having its base end disposed in a plane transverse to the axes of the rotors and adjacent to the high pressure port of the machine, one rotor of each pair being of female rotor type formed such that at least the major portion of each land and groove is located inside the pitch circle of the rotor, the other

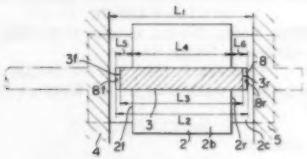
rotor of the pair being of male rotor type formed such that at least the major portion of each land and groove is located outside the pitch circle of the rotor, the lands of one rotor following the envelopes developed by the grooves of the other rotor to form a continuous sealing line between the rotors, each rotor groove being provided with a primary flank forming the peripherally outer wall of the leg of said chamber comprised of a female rotor groove and the peripherally inner wall of the leg of said chamber comprised of a male rotor groove, respectively, and a secondary flank forming the other wall of the related leg of the chamber, characterized in that in a plane perpendicular to the rotor axes at least the primary flank of each male rotor groove comprises a first flank portion adjacent to the pitch circle and extending outwardly therefrom, that the tangent to said first flank portion in its pitch point, where it intersects with the pitch circle, and a radial line from the centre of the rotor through the pitch point form an angle therebetween falling within the range of 0.25 rad to 0.75 rad, when measured outside the pitch circle from the tangent towards the groove, and that the radius of curvature of said first flank portion in its pitch point has a length exceeding the product of the pitch radius and the sine function of said pitch point angle between the tangent and the radial line.

4,435,140

COMPRESSOR HAVING ROTOR ROTATING WITHOUT CONTRACTING SIDE PLATES

Mitsuo Inagaki, and Hideaki Sasaya, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 14, 1981, Ser. No. 330,581
Claims priority, application Japan, Dec. 16, 1980, 55-178358
Int. Cl.³ F01C *1/00*; F04C *2/00*
U.S. Cl. 418—259 **1 Claim**



1. In a rotary compressor comprising:
a cylindrical housing,
side plates secured on axial opposite ends of said housing,
a rotor rotatably mounted in said housing and formed with a plurality of slots extending radially of said rotor, and
a plurality of vanes each slidably received in one of said slots;
said housing, said side plates, said rotor and said vanes cooperating with one another to define a working space of a variable volume;
the improvement wherein:
said rotor has an increased diameter portion substantially in a central position of said rotor as viewed in an axial direction of the latter and diameters smaller than said increased diameter on opposite axial sides thereof;
said slots extend through said increased and smaller diameter portions; and
said increased diameter portion, said vanes, said slots, and said housing having the dimensional relationships expressed by the following formulae,

$L_1 > L_3 > L_4$,

$L_2 > L_3$,

$L_3 > L_4 + L_5$, and

$L_3 > L_4 + L_6$,

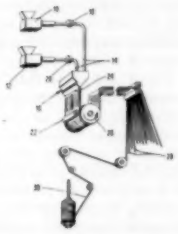
in which
L_1 = an axial length of said housing,
L_2 = an axial length of said slots,
L_3 = an axial length of said vanes,
L_4 = an axial length of said increased diameter portion,
L_5 = distance between a forward end of said slots and a forward end of said increased diameter portion, and
L_6 = distance between a rear end of said slot and a rear end of said increased diameter portion.

4,435,141

MULTICOMPONENT CONTINUOUS FILM DIE

Carl S. Weisner, Pleasant Hill, and David W. Raynolds, Fairfield, both of Calif., assignors to Polyloom Corporation of America, Dayton, Tenn.

Filed Apr. 7, 1982, Ser. No. 366,238
Int. Cl.³ B29F *3/12*
U.S. Cl. 425—131.1 **15 Claims**



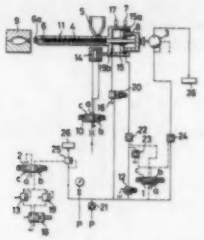
1. Die apparatus for extruding a multicomponent polymer film between 1 and 10 mils in thickness comprising:
a body member including a body block and at least one body section, removably attached to said body block, said body member having one manifold through which a feedstock of one molten polymer is flowed and at least one other manifold through which at least another feedstock of molten polymer is flowed, said body member having an elongated lip passage through which a sheet of polymer film formed of said feedstocks is extruded under pressure; and
an insert, which, together with surfaces of said body member, forms separate, longitudinally alternating passages communicating between said manifolds and said lip passage for interspersing, in alternating arrangement, the feedstocks, said insert including a replaceable bar having a longitudinal axis parallel to a plane of the extruded film and having a planar, longitudinally extending face with a plurality of slots formed therein, wherein the planar face of the bar is abutted with a planar face of the body section when the body section is attached to the body block to define a first plurality of said passages which open into one of said manifolds and longitudinally narrow downstream of said one manifold to facilitate a sweeping flow of feedstock through the die apparatus.

4,435,142

SCREW IN-LINE TYPE INJECTION MOLDING METHOD AND APPARATUS FOR LOW-PRESSURE INJECTION MOLDING

Akiyoshi Morita, and Mitsuyoshi Sato, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 136,083, Mar. 31, 1980, Pat. No. 4,366,110.
This application Jun. 9, 1982, Ser. No. 386,518
Claims priority, application Japan, Mar. 31, 1979, 54-38810
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—145 **1 Claim**



1. A screw in-line type injection molding machine for injecting a urea mixed resin powder into a mold, comprising:

hopper means for receiving an urea mixed resin powder;

an injection cylinder coupled to said hopper means, said cylinder including a nozzle at one end and a hydraulic chamber at the other end, said nozzle facing said mold;

a screw inserted into said injection cylinder, said screw being rotatably and axially free to move within said cylinder;

a hydraulic motor coupled to said screw to rotatably drive said screw;

an injection piston which slidably moves within said hydraulic chamber to divide said chamber into a first and a second pressure chamber, said piston being coupled to said screw and movable together with said screw in said hydraulic chamber;

a first limit switch installed at a position where it is contacted by said injection piston when said screw is withdrawn to a distance where a space equivalent to a desired charge of one of a molten and plasticized urea mixed resin powder in said cylinder is secured;

a second limit switch installed at a position where it is contacted by said piston when said screw has moved a distance at which the charge of one of a molten and plasticized urea mixed resin powder into said mold is 85 to 95% completed;

a first hydraulic circuit including means for selectively supplying a working hydraulic oil to said first pressure chamber at high and low injection pressures, so that a first injection may be performed under said high injection pressure at a specified first injection velocity and a second injection may be effected under said lower injection pressure;

means for moving said cylinder in the direction of the cylinder axis; and

a second hydraulic circuit for actuating said means for moving whereby said nozzle can contact said mold,

wherein said first hydraulic circuit is constructed to supply hydraulic oil so that said high injection pressure lies within the range of 400–700 Kg/cm^2 in converted injection pressure and said first injection velocity lies within the range of 40–50 mm/sec, while said lower pressure lies within the range of 50–150 Kg/cm^2 in converted injection pressure,

wherein said first hydraulic circuit is constructed such that said hydraulic motor stops the rotation of said screw when said first limit switch is contacted by said injection piston, and

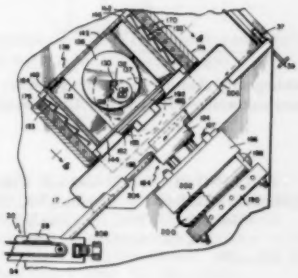
wherein said first hydraulic circuit is constructed such that the change of the pressure of the pressurized hydraulic oil supplied to the first pressure chamber from high to low is effected when the injection piston contacts said second limit switch.

4,435,143

SMALL BLANK FEEDER AND TRAY FORMER

Edmond N. Dempsey, Marion, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Filed May 27, 1982, Ser. No. 382,716
Int. Cl.³ B29C *17/00, 1/00*
U.S. Cl. 425—150 **31 Claims**



1. A press, comprising

a frame,

a first die and a base for supporting the first die with respect to the frame,

a second die and a reciprocally movable head for reciprocally moving the second die with respect to the first die,

a shaft rotatably mounted within the frame and an eccentric drive means for connecting the shaft to the head,

a flywheel rotatably mounted to the frame, drive means for rotatably driving the flywheel, a selectively actuable clutch for engaging the flywheel to the shaft, and

control means for controlling dwell time of the press by the selective actuation of the clutch at a preselected rotation position of the shaft, the control means including means for sensing the position of the shaft and means for actuating the clutch in response to a sensed position of the shaft.

4,435,144

APPARATUS FOR SHAPING DOUGH

Kate Kemper, Furthstr. 10, CH 8700 Küsnacht-Zürich, Switzerland

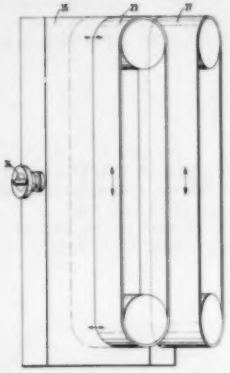
Filed Jun. 8, 1981, Ser. No. 271,800
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021329; Mar. 13, 1981, 3109683
Int. Cl.³ A21C *7/01, 7/02*
U.S. Cl. 425—332 **13 Claims**

1. An apparatus for shaping dough comprising:

a pair of endless band units, each of said band units having a molding surface forming a V-shaped gap for the dough to be shaped;

rotary means for imparting oscillatory motion to one of said endless band units in the direction normal to the molding surface and said means including a molding band arranged on an adjusting slide displaceable in said direction and a

motor driven eccentric device for actuating said molding band and



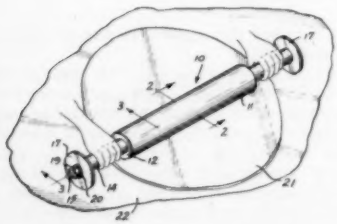
a molding strip abutting the molding surface of said endless band unit adapted for said oscillatory motion.

4,435,145

ROLLING PIN WITH GAUGE WHEELS

Gerald Abrams, P.O. Box 351, Pinetops, N.C. 27864

Filed Feb. 23, 1982, Ser. No. 351,566
Int. Cl.³ A21C *1/08, 3/02*
U.S. Cl. 425—458 **2 Claims**



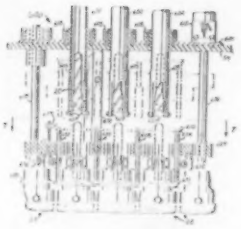
1. A rolling pin for rolling a mass of resilient material to a constant uniform thickness comprising an elongated cylindrical body having a predetermined diameter and having opposite ends, rod means extending axially outwardly from each end of said body, each of said rod means having an outer end, gauge wheel means mounted adjacent said outer end of each of said rod means, said gauge wheel means both having the same diameters and being of a diameter which is greater than the predetermined diameter of said body, handle means carried by each of said rod means, said handle means being disposed between said gauge wheel means and said ends of said cylindrical body, and locking means for obstructing the removal of each of said gauge wheel means for said rod means, said gauge wheel means having a central opening therethrough of a size to slidably receive said outer ends of said rod means, stop means on each of said rod means between said outer ends thereof and said handle means for obstructing the movement of said gauge wheel means along said rod means toward said cylindrical body whereby said handle means are spaced inwardly of said gauge wheel means so that downward pressure applied to either of said handle means will be directed to said gauge wheel means and said cylindrical body even if no downward pressure is being applied to the other of said handle means.

4,435,146

APPARATUS FOR HIGH RATE PRODUCTION OF BIAXIALLY ORIENTED THERMOPLASTIC ARTICLES

James G. Wiatt; James W. Calvert; Samuel L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 257,468, Apr. 24, 1981, Pat. No. 4,382,760.
This application Jan. 25, 1983, Ser. No. 460,827
Int. Cl.³ B29C *17/07;* **B65G** *47/06*
U.S. Cl. 425—534 **2 Claims**



1. An apparatus for high rate production of biaxially oriented articles from thermoplastic article preforms, the articles having a neck portion and a formable portion, the apparatus biaxially expanding the formable portion when its temperature is at or near the molecular orientation temperature of the thermoplastic and while the preform is suspended by a carrier for transporting the article, the carrier including grippers for releasably retaining the article by the neck portion, the apparatus comprising

(a) a machine frame; and

(b) an article preform loading apparatus for loading article preforms into the carriers, the preform loading apparatus comprising

(1) a mounting plate attached to the machine frame and spaced apart from a carrier,

(2) staging means attached to the mounting plate for releasably retaining an article preform by a neck portion thereof,

(3) transfer means movably connected to the mounting plate to move between the staging means and the carrier, for transferring the preform from the staging means to the carrier, the transfer means releasably grasping the preform by the formable portion, and

(4) gripper operating means movably connected to the transfer means for

(a) forcing the gripper into its article release condition prior to advancement of the article preform thereinto, and

(b) allowing the gripper to return to its article retention condition subsequent to advancement of the article preform thereinto.

4,435,147

SPLIT INJECTION MOLD

William H. Myers, Raytown, and Dennis L. Dundas, Lee's Summit, both of Mo., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Apr. 12, 1982, Ser. No. 367,653
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—577 **5 Claims**

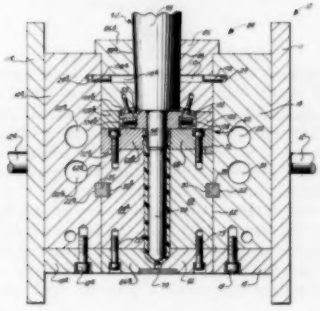
1. An improved injection molding apparatus having two opposed platens which are powered for movement towards and away from one another and a core pin reciprocally movable from a position outside of an injection mold cavity to a position inside of such mold cavity, said injection mold cavity being defined by a pair of injection mold halves carried on said platens, the improvement comprising:

a. a split carrier means, one-half of said split carrier means

being affixed to one of said platens and the other of said split carrier means being affixed to said other platen, each of said split carrier halves having,

i. a pocket into which one of said injection mold halves nest, said pocket having (a) a rear planar wall lying in a plane substantially perpendicular to the long axis of said core pin movement, and (b) two outwardly angled side walls, one of said side walls emanating from one latitudinal extent of said rear planar wall and the other of said side walls emanating from the other latitudinal extent; and,

ii. a split alignment means for aligning said core pin with a line of reference when said core pin is positioned inside of said injection mold cavity, one of said split alignment means halves being affixed to one of said split



carrier halves and the other of said split alignment means halves being affixed to the other of said split carrier means halves; and,

iii. a core pin alignment means carried at the upper extent of said core pin, said core pin alignment cooperating with said split alignment means to effect said core pin alignment with said line of reference; and

b. said injection mold halves each having a planar rear wall and two opposed outwardly angled side walls, said planar wall and said side walls being dimensioned and configured to achieve aligned nesting of each injection mold half in its respective pocket whereby said injection mold cavity will be in alignment with said line of reference; and

c. means for removably affixing each of said injection mold halves to its respective pocket.

4,435,148

LOW POLLUTION METHOD OF BURNING FUELS

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 22, 1982, Ser. No. 360,413

Claims priority, application United Kingdom, Mar. 24, 1981, 8109214

Int. Cl.³ F23D *19/02*

U.S. Cl. 431—7 **15 Claims**

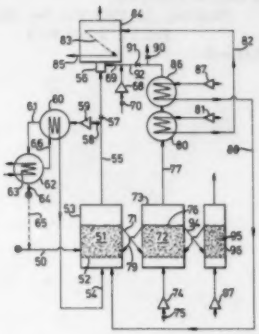
1. A low pollution method of burning a fuel, comprising the steps of:

(a) passing the fuel into a dense phase fluidized bed of particles which are fluidized by a fluidizing gas substantially free of non-combustible inert components;

(b) partially oxidizing the fuel within the dense phase bed at an elevated partial oxidation temperature to produce a combustible gas which has a low content of non-combustible inert components.

(c) passing at least some of the combustible gas to a burner; and

(d) burning the combustible gas in a flame at the burner with a combustion-supporting gas to which has been added a



non-combustible inert gas to suppress or reduce the formation of pollutants in the resulting flue gas.

4,435,149

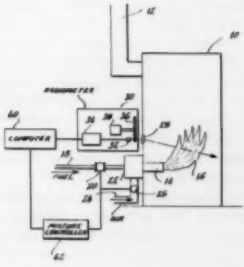
METHOD AND APPARATUS FOR MONITORING THE BURNING EFFICIENCY OF A FURNACE

Robert W. Astheimer, Westport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 7, 1981, Ser. No. 328,010

Int. Cl.³ F23N *1/02*

U.S. Cl. 431—12 **6 Claims**



1. The method of monitoring the burning efficiency of a furnace having variable burning rates comprising the steps of:

viewing the flame of said furnace with an infrared detector in a manner such that the thickness of the section of the flame viewed by the detector varies with the burner feeding rate,

measuring the infrared radiation emitted by said flame in at least three different wavelengths, having a first wavelength representing a strong emission band of carbon dioxide, a second wavelenth representing a weak emission band of water and carbon dioxide, and a third wavelength reprsenting a band where none of the furnace gases absorb,

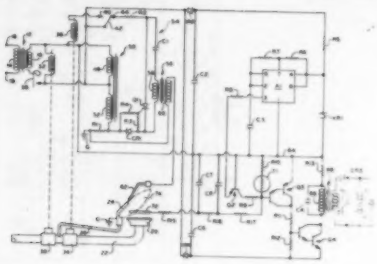
deriving a control parameter based on the ratio of the measurements of the third to the first wavelengths corrected by the measurement of said second wavelength,

and applying said control parameter to said furnace for varying the fuel to air mixture for maximizing the burning efficiency of said furnace.

4,435,150
GAS BURNER CONTROL SYSTEM

Dennis M. Rippelmeyer, Waterloo, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 22, 1982, Ser. No. 421,299
Int. Cl.³ F23Q 9/14
U.S. Cl. 431—46 **12 Claims**



1. In a gas burner control system wherein a main burner is ignited by a pilot burner, wherein the pilot burner is ignited upon a call for heat, and wherein gas flow to the main burner is prevented until a pilot burner flame exists, the improvement comprising:

an oscillator having an input connected to a power source so as to be energized thereby upon a call for heat and maintained energized thereby as long as said call for heat exists, and an output having a high frequency signal appreciably higher than 60 Hz;

solid-state switch means connected to said output of said oscillator;

capacitor means connected to said switch means and operative, when sufficiently charged, for effecting on-off operation of said switch means at the frequency of said high frequency output signal of said oscillator;

coupling circuit means including a transformer having a primary winding connected in circuit with said switch means and a secondary winding connected in circuit with means for controlling the gas flow to the main burner,

said coupling circuit means being effective to enable sufficient energizing of said means for controlling the gas flow to the main burner only when said frequency of said on-off operation of said switch means is within a predetermined frequency span; and

flame responsive means connected to said capacitor means for effecting said sufficient charging of said capacitor means only when the pilot burner flame exists.

4,435,151
FUEL SUPPLY CONTROL SYSTEM

Michiaki Matumoto, Tokyo; Hironori Etou, Kashiwa, and Hidekazu Nakamoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,138
Claims priority, application Japan, May 26, 1980, 55-68976
Int. Cl.³ F23N 1/02
U.S. Cl. 431—90 **3 Claims**

1. A fuel supply control system comprising:

a first diaphragm;

a first chamber located adjacent to said diaphragm on one side thereof;

a valve port of a liquid fuel passage connected to a liquid fuel source on an upstream side thereof and to said chamber on a downstream side thereof;

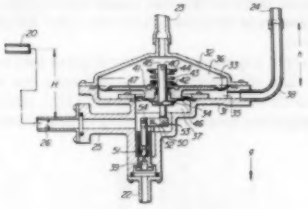
a liquid fuel supply pipe connected to said chamber for supplying the liquid fuel from said chamber to a combustor;

a second diaphragm of a larger effective area than that of said first diaphragm and located on a side of said first diaphragm opposite to said first chamber;

a valve connected to said diaphragms for regulating the opening of said valve port;

a second chamber located between said diaphragms;

a riser pipe connected to said second chamber at one end and to a portion of an air supply and exhaust passage system at the other end;



a third chamber located adjacent to said second diaphragm on a side thereof opposite to said second chamber and connected to a combustion air supply passage system in which the pressure is higher than that in said air supply and exhaust passage system; and

the vertical distance H between an end of said liquid fuel supply pipe from which the liquid fuel is directed to said combustor and said chamber has a value commensurate with the weight or the like of said diaphragm and other movable parts in accordance with the relationship:

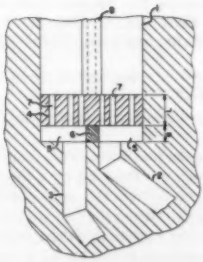
$$H\gamma = \frac{A_0 r_1 P_1 + W_0}{A_2 + A_0 r_1},$$

where γ=specific gravity of the liquid; A_0=area of the valve port; r_1=a valve constant $\leqq 1$; P_1=pressure of said end of the liquid fuel supply pipe; A_2=effective pressure receiving area of said diaphragm; and W_0=weight of movable parts.

4,435,152
APPARATUS FOR IMPROVING THE FLOW OF GASES TO A COMBUSTION CHAMBER OF A COKE OVEN OR THE LIKE

Carl-Heinz Struck, Bochum, and Ralf Schumacher, Hagen, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,151
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037956
Int. Cl.³ F23D 21/00
U.S. Cl. 431—170 **7 Claims**



1. Apparatus for conducting a flow of combustion gases

from ducts into a heating flue of an industrial gas-fired system, such as a coke oven, which system includes recuperative waste-gas heat recovery means for preheating sand combustion gases which comprise air when heating by combustion of rich gas and comprise air and lean gas when heating by combustion of lean gas; said heating flue having a lower end, a bottom wall, and an upper end; at least a portion of said combustion gases being introduced through said ducts from the outlet of said waste-gas heat recovery means into said lower end of said heating flue; said apparatus including the combination therewith of a flow plate mounted in said lower end of said heating flue and spaced from said bottom wall to form a chamber therebelow, and a central refractory web to divide said chamber into two halves in a gas-tight manner; each of the chamber halves communicating with one of said ducts; the height of said chamber to the thickness of said flow plate being in a ratio of within 0.3 to 0.7.

4,435,153

LOW BTU GAS BURNER

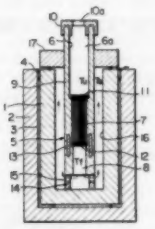
Takashi Hashimoto, Ibaraki, and Shigeyuki Yamazaki, Abiko, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 284,792

Claims priority, application Japan, Jul. 21, 1980, 55-98752; Jul. 21, 1980, 55-98753

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 **10 Claims**



1. A low Btu gas burner comprising:

a combustor means;

means for defining a primary passage;

means for defining a secondary passage separated from the primary passage;

at least one set of fine ducts located in at least the primary passage;

at least one combustion chamber located on a downstream side of the at least one set of fine ducts;

at least one heater located in a wall of the combustor means;

means for communicating the primary and secondary passages with each other at first ends thereof;

means for connecting a second end of the primary passage to an inlet port for a low Btu gas; and

means for connecting a second end of the secondary passage to an exhaust port for combustion gas, whereby the combustion gas heats the at least one set of fine ducts and the at least one combustion chamber through the wall of the combustor means.

4,435,154

HEAT TRANSFER DEVICE

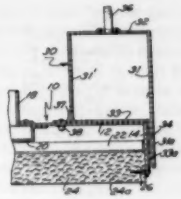
David L. Vigneau, 12 Payan St., West Warwick, R.I. 02893

Filed Jul. 19, 1982, Ser. No. 399,293

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 **4 Claims**

1. A heat transfer device comprising a convective radiant burner having a gas permeable matrix, a combustible gas plenum chamber having top, side, and end walls with an open bottom, the side and end walls having abutment means, said matrix received in the open bottom and seated against said abutment, a plurality of air knife structures abutting and extending along the outer surface of the side and end walls, means for feeding each air knife structure with air independently of the others to be able to establish in each air knife independent exit velocities, each air knife structure forming a narrow elongated air discharge slot.



4,435,155

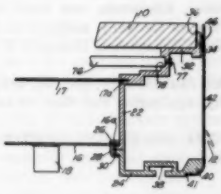
INFRA-RED RADIANT BURNER

David L. Vigneau, 12 Payan St., West Warwick, R.I. 02893

Filed Apr. 13, 1983, Ser. No. 484,523

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 **5 Claims**



1. An infra-red radiant burner comprising a rectangular permeable matrix, a first frame member part extending along two opposite sides and a second frame member part extending along the other two opposite sides, said frame members having a ledge upon which the matrix lies and a peripheral lip with means protruding therefrom inwardly to grip the edge of the matrix, said frame members having grooves facing each other, a flat sheet received in said grooves, said sheet forming a wall, said sheet with said frame members forming a gas combustion mixture chamber with said matrix, said frame members being hollow, means supplying non-combustible gas to and from each of said frame members independently of the other, said frame members each having a narrow slot exit means adjacent said peripheral lip and on the outer side of said lip.

4,435,156

SUBMINIATURE ARRAY WITH NORMALLY CLOSED AND NORMALLY OPEN SWITCHES

Boyd G. Brower, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 2, 1982, Ser. No. 365,053

Int. Cl.³ F21K *5/00*

U.S. Cl. 431—359 **10 Claims**

1. In a miniaturized photoflash array having a circuit board with a printed circuit including common and energizing conductors on the inner surface thereof and a plurality of flashlamps each having a pair of electrically conductive leads connected to said printed circuit, the improvement comprising a plurality of normally closed (N/C) switches formed from at least one continuous strip of switching material and connecting a plurality of flashlamps to said common conductor of said printed circuit, a plurality of normally open (N/O) switches

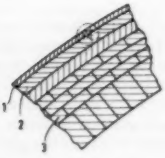
parallel coupling all except one of said plurality of flashlamps to said energizing conductor of said printed circuit and circuit means electrically coupling all except one of said flashlamps to

a sequentially following flashlamp whereby parallel paths for energizing a sequentially following flashlamp by said energizing conductor are provided.

4,435,157
HEAT EXCHANGER CONSTRUCTION AND METHOD OF OPERATION

Hans-Eugen Bühler, Königstein, and Horst Kalfa, Frankfurt, both of Fed. Rep. of Germany, assignors to Brohltal-Deumag AG fur feuerfeste Erzeugnisse, Urmitz b. Koblenz, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,506
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101174
Int. Cl.³ F24H *7/00;* **C22C** *33/00;* **C21B** *7/02, 9/00*
U.S. Cl. 432—30 **17 Claims**



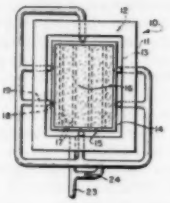
1. A heat exchanger having an inner refractory lining, an intermediate insulating layer and an outer metal shell, said insulating layer being disposed to maintain the temperature of said metal shell in the range of from 20°–60° C. during the operation of said heat exchanger, said metal sheel comprising an essentially chromium-free structural steel having a molybdenum content in the range of from 0.01 to 2% by weight.

4,435,158
HEATED CHAMBER WALLS

Maurice Harman, Milton Keynes, England, assignor to The Energy Equipment Company Limited, Bedfordshire, England

Continuation-in-part of Ser. No. 43,325, May 29, 1979, Pat. No. 4,299,562. This application Jun. 25, 1981, Ser. No. 277,383
Claims priority, application United Kingdom, May 30, 1978, 24517/78
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ F27B *15/00;* **F23G** *5/00;* **F23M** *5/00;* **F27D** *1/00*
U.S. Cl. 432—58 **9 Claims**

4. A combustor or furnace of the fluidized bed shell type boiler comprising a furnace tube, a front end wall, a rear end wall and a plurality of fluidizing sparge tubes extending between said front and rear end walls, said front end wall and said rear end wall being mounted to provide an annular gap with respect to inner surface of said furnace tube, and at least

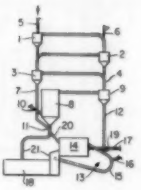


one sparge pipe provided within said gap between said front end wall and said furnace tube.

4,435,159
APPARATUS FOR THERMALLY TREATING PULVEROUS MATERIALS SUCH AS CEMENT RAW MATERIAL

Hans B. Knudsen, Kolding, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,725
Claims priority, application United Kingdom, Nov. 17, 1980, 8036837
Int. Cl.³ F27B *7/02;* **C04B** *7/02*
U.S. Cl. 432—106 **22 Claims**



1. Apparatus for thermally treating pulverous materials which comprises:

(a) preheating means having inlet and outlet means for heating gas and raw materials;

(b) suspension calcining means having inlet means for fuel, combustion air and preheated raw materials, combustion gas outlet means communicating with said heating gas inlet means of said preheating means;

(c) sintering furnace means having inlet means for fuel and combustion air, and combustion gas outlet means communicating with said heating gas inlet means of said preheating means, and outlet means for the sintered product, said calcined material outlet means of said suspension calcining means communicating with said material inlet means of said sintering furnace means;

(d) air cooling means for cooling the sintered product, said air cooling means having air outlet means communicating with said air inlet means of said sintering furnace means and with said air inlet means of said suspension calcining means, and material inlet means communicating with said sintering furnace means;

(e) said sintering furnace means comprising at least one sintering drum rotatable about an axis inclined with respect to the horizontal and suspension inlet duct means provided with material inlet means and having at least a first end portion communicating with said air outlet means of said material cooling means and at least a second end portion communicating with said upper end portion of said sintering furnace means substantially tangentially to the inner surface portion of said sintering furnace means;

(f) fuel inlet means projecting into at least one of said material inlet means of said sintering furnace means and said suspension inlet duct means;

(g) combustion gas outlet duct means communicating with at least one end portion of said sintering furnace means; and

(h) material outlet means for the sintered product at the lower end portion of said sintering furnace means.

4,435,160

METHOD AND MANUFACTURE FOR APPLYING AND REMOVAL OF ORTHODONTIC BRACKET

Ronald M. Randklev, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 172,218, Jul. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 137,631, Apr. 7, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,500

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—9 **13 Claims**

1. A manufacture for orthodontic bracket application and removal without abrading tooth enamel, comprising:

(1) an orthodontic bracket adhesive composition which contacts said tooth enamel, comprising a finely divided first inorganic material admixed with a polymerizable resin, said first inorganic material being non-toxic, essentially insoluble in mouth fluids, and having a Mohs hardness less than about 4.5;

(2) a solid abrasive tool which abrasively contacts said orthodontic bracket adhesive composition to effect removal thereof, comprising a second inorganic material, said second inorganic material being non-toxic and having a Mohs hardness which is greater than the Mohs hardness of said first inorganic material and less than about 5.

11. A method for applying an orthodontic bracket to a tooth surface and for removing said bracket therefrom, comprising the steps of:

A. cleaning said tooth surface using dental prophylactic paste and an etchant;

B. applying a thin layer of sealant resin to said tooth surface;

C. coating said thin layer of sealant resin with a layer of orthodontic bracket adhesive composition comprising a finely divided first inorganic material admixed with a polymerizable resin, said first inorganic material being non-toxic, essentially insoluble in mouth fluids, and having a Mohs hardness less than about 4.5;

D. applying an orthodontic bracket to said layer of orthodontic bracket adhesive composition and curing said adhesive composition;

E. removing said orthodontic bracket at the completion of orthodontic treatment; and

F. removing any residual adhesive which may remain on said tooth surface by grinding said residual adhesive away with a solid abrasive tool comprising a finely divided second inorganic material admixed with a solid binder, said second inorganic material being non-toxic and having a Mohs hardness which is greater than the Mohs hardness of said first inorganic material and less than about 5.

4,435,161

DENTAL TURBINE

David Mosimann, Ch. des Grillons 13-15, CH-2504 Bienne 6, Switzerland

PCT No. PCT/CH81/00113, § 371 Date Jun. 10, 1982, § 102(e) Date Jun. 10, 1982, PCT Pub. No. WO82/01309, PCT Pub. Date Apr. 29, 1982

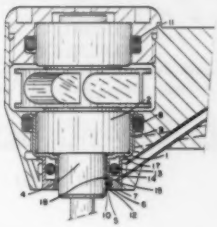
PCT Filed Oct. 8, 1981, Ser. No. 395,084

Claims priority, application Switzerland, Oct. 10, 1980, 7576/80

Int. Cl.³ A61C *1/05*

U.S. Cl. 433—132 **5 Claims**

1. A dental turbine comprising a rotor assembly receiving turbine head forwardly terminating in a nose containing a turbine shaft accommodating bore which forms an inwardly facing bore surface, and a rotor assembly laterally displaceably received in the head and including a turbine shaft mounted for rotation in bearing means, such bearing means being positioned for lateral displacement relative to the head and including a correspondingly laterally displaceable bearing adjacent to the bore and having a rotatable inner bearing part connected to the shaft for movement therewith and a cooperating non-rotatable outer bearing part laterally displaceably positioned in the head, and such shaft having a forward portion forwardly of the bearing and extending through the bore in inwardly spaced relation to the bore surface and thereby defining a clearance space between the shaft and the bore surface for accommodating lateral displacement of the shaft relative to the head thereat, and a non-rotatable and correspondingly laterally displaceable protective sleeve fitted to the outer bearing part



for lateral displacement therewith and extending therealong to the forward portion of the shaft and into the annular space and maintained in outwardly spaced relation to the forward portion of the shaft to permit unhindered rotation of the shaft and to provide a relatively minute clearance gap between the forward portion of the shaft and the adjacent portion of the sleeve in the clearance space for protecting against entry of external waste material thereat, and correspondingly maintained in inwardly spaced relation to the bore surface to provide a resultant reduced clearance space between the adjacent portion of the sleeve and the bore surface for similar protection against entry of such waste material thereat yet sufficient for accommodating lateral displacement of the forward portion of the shaft and the sleeve upon lateral displacement of the rotor assembly relative to the head.

4,435,162

TRIGONOMETRY VISUALIZERS AND METHOD OF MAKING SAME

Justin P. Schoenwald, 876 Burrow Rd., Ontario, N.Y. 14519

Filed Dec. 22, 1982, Ser. No. 452,128

Int. Cl.³ G09B *23/04*

U.S. Cl. 434—215 **10 Claims**

1. A trigonometric visualizer, comprising

a pair of plane members connected together for rotation relative to each other about a common axis,

means defining a first circle on one of said members coaxially of said axis,

means defining on said one member a pair of radial extending zones which intersect at right angles at said axis and which define therebetween at least one quadrant of said circle,

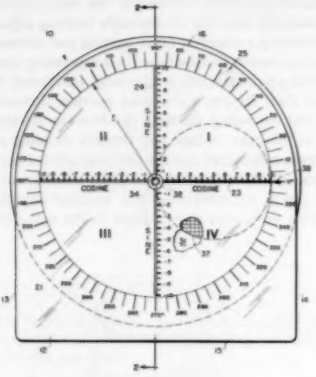
a plurality of spaced graduations arranged along each of said zones and denoting the decimal values of one of two trigonometric functions for a ninety degree interval about said axis,

a plane geometric figure formed on the other of said members and having a periphery viewable through said zones during relative rotation between said members, and

means for indicating the degree to which said members are rotated relative to each other,

said periphery being operative, at the point where it inter-

sects one of said zones, to indicate the decimal value of the associated trigonometric function corresponding to the



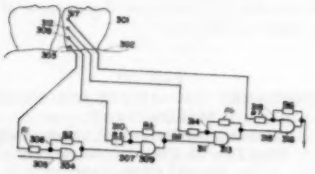
indicated degree of relative rotation between said members.

4,435,163

DENTAL TECHNIQUE TRAINING DEVICE

Oscar A. Schmitt, 4218 State St., Erie, Pa. 16509; Robert J. Nedreski, 5073 Wiltsie Rd., Erie, Pa. 16510, and Eskil Karlson, 4634 State St., Erie, Pa. 16509

Filed Feb. 19, 1982, Ser. No. 350,207
Int. Cl.³ G09B *23/28*
U.S. Cl. 434—263 **23 Claims**



1. A dental teaching device comprising,

a manikin head having a mouth with moveable jaw and teeth,

each said tooth having at least one electrical sensing element imbedded therein,

a microprocessor,

at least some of said electrical sensing elements being disposed in said teeth, being connected to said microprocessor, and actuating counting devices contained in the manikin,

said electrical elements include a special sensing element connected to said microprocessor by means of an elongated electrical conducting means connected to a said microprocessor,

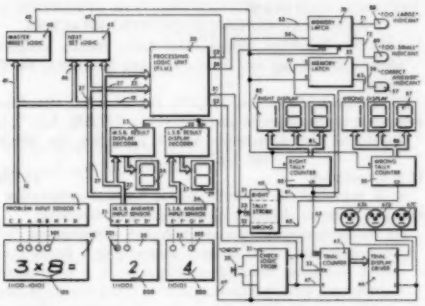
said special sensing element being adapted to be brought into close proximity to a said tooth and adapted to sense the electrical elements in said teeth whereby the effect on said teeth is indicated.

4,435,164

DIDACTIC APPARATUS PROVIDING FOR TUTELAGE OF RESPONSES THROUGH INCULCATION

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Sep. 17, 1979, Ser. No. 76,480
Int. Cl.³ G09B *7/02*
U.S. Cl. 434—337 **19 Claims**



1. Didactic means adapted for providing essentially a disjunctive problem entry and answer response entry effect thereby providing a student directed learning experience, comprising in operative combination:

i. a set of substantially planar interrogative elements with each element therewith provided individually having thereon at least a first symbolic stimuli which is presented as an effectively visible problem to the student for tutorial consideration, together with a first cryptogrammic code identity corresponding to the said first symbolic stimuli which is machine readable by noncontiguous means and results in an effective indication of the requisite student response;

ii. a set of substantially planar responser elements with at least one element selectable therefrom having second symbolic stimuli presented thereon which substantially serves as an effectively visible answer component which is correlative with the said individual interrogative element problem put to the student, together with a second cryptogrammic code identity corresponding to the said second symbolic stimuli which is machine readable by noncontiguous means and results in an effective indication of the response selection;

iii. an interrogative element sensor station means comprising a substantially separate stationary sensing element means for each cryptogrammic code element which is effectively recipient for the purpose of converting the said first cryptogrammic code identity representations on the said interrogative element into a plurality of effectively parallel first functional electical signals;

iv. a responser element sensor station means comprising a substantially separate stationary sensing element means for each cryptogrammic code element which is effectively recipient for the purpose of converting the said second cryptogrammic code identity representations on at least one said responser element into a plurality of effectively parallel second functional electrical signals;

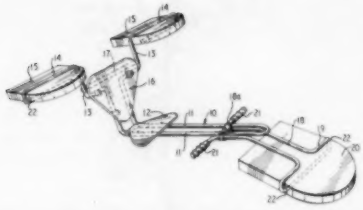
v. processing logic means arranged as an effectual combination of electrical devices suited for the correlative manipulation and comparison of the said first and said second functional electical signals effectively coupled thereto as provided by the said sensor station means; and,

vi. indication means coupled with the said processing logic unit to signal and thereby score the student as to the exactitude of his/her selected responser element answer.

4,435,165
FLOTATION DEVICE FOR SUPPORTING A PERSON IN WATER

James E. Johnson, Cheltenham, England, assignor to J. E. Johnson & Sons (Engineers) Limited, Cheltenham, England

Filed Jul. 17, 1980, Ser. No. 169,755
Claims priority, application United Kingdom, Jul. 31, 1979, 7926682
Int. Cl.³ B63C 9/08
U.S. Cl. 441—130 13 Claims

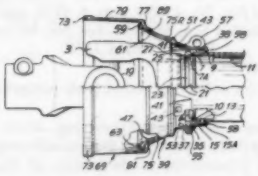


1. A flotation device for supporting a person in water comprising an elongate frame including at least one body-support member, and front and rear float assemblies mounted on the frame, at least one of said float assemblies comprising two float elements spaced apart transversely of the elongate frame, and locating means on the frame providing a push-fit connection between the float elements and the frame, whereby the float elements are easily attachable and detachable to and from the frame by hand, each float element comprising a body of buoyant material connected to the elongate frame by a respective mounting element, each mounting element being shaped to define an aperture into which said body of buoyant material is received, each mounting element being round aluminum tubing bent into a loop to define said aperture, each body of buoyant material including notches between two portions of greater cross-sectional area, the buoyant material being retained in the aperture by forcing it through the loop of bent aluminum tubing until the tubing snaps into the notches.

4,435,166
GUARD MADE UP OF SECTIONAL UNITS FOR CARDAN SHAFTS

Edi Bondioli, Via Gina Bianchi 18, Suzzara, Mantova, Italy

Filed May 25, 1982, Ser. No. 381,747
Claims priority, application Italy, Jun. 5, 1981, 9437 A/81
Int. Cl.³ F16D 3/84
U.S. Cl. 464—172 9 Claims



1. A guard for a cardan shaft having at least one universal joint with a base, and a shaft connected to the base, comprising:

a collar (21) having an annular throat (23) and mounted on the base;

an inner radially expandable open ring nut (7) having an inner annular projection (25) rotatably engaged in said annular throat (23), a plurality of resilient tongues (27) extending on one side of said ring nut, and a plurality of appendixes (15, 33) extending on an opposite side of said ring nut and forming a seat on the inner surface thereof;

a telescopic guard part (9, 11) having a tubular sheath (9) for covering the shaft and engaging in said seat, said sheath having a plurality of slots (13);

at least some of said appendixes (15) having click detents (15A) for engagement into said slots (15) of said tubular sheath;

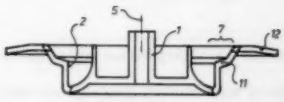
an inner main funnel (39) mounted on and covering said inner ring nut (7) holding said nut and preventing its radial expansion, said inner main funnel having a tongue seat (41) for each of said resilient tongues (27) for a spring-engagement of said inner main funnel (39) on said inner ring nut (7) and for preventing relative rotation between said nut and said inner main funnel; and

an outer funnel-shaped band (69) spring-fitted on said main funnel to form an extension thereof in an axial direction of said guard and axially fixed with respect to said inner main funnel.

4,435,167
CENTRIFUGE

Reinhard Stöwer, Au in der Hallertau, Fed. Rep. of Germany, assignor to Compur-Electronic GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,409
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036538
Int. Cl.³ B04B 5/02
U.S. Cl. 494—16 15 Claims

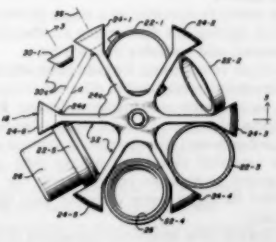


1. In a centrifuge having a rotor and at least one sample vessel swingingly supported in said rotor for swinging into a horizontal position on running the centrifuge, the invention residing in that said centrifuge has a rolling system for supporting said vessel on said rotor, said system being made up of at least two cooperating rolling structures of which at least one is convexly curved, one structure being on the rotor and the other on the vessel, said convexly curved structure being arranged normal to a plane of rotation of said rotor, said structures being adapted to permit said sample vessel to swingingly turn into and out of a horizontal centrifuging position.

4,435,168
CENTRIFUGE ROTOR APPARATUS WITH SLING ARMS

A. Terence Kennedy, Walpole, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed Jun. 4, 1982, Ser. No. 384,899
Int. Cl.³ B04B 5/02
U.S. Cl. 494—20 10 Claims



1. In a centrifuge rotor having plural arms extending radially

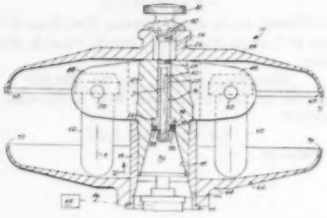
from a hub, said rotor being arranged for supportingly receiving on said arms pivoting support means for centrifuge carrier means, the improvement in which each rotor arm comprises sling means formed by vertically-spaced upper and lower arm segments joined at a sling seat distal from the rotor hub, said segments of each rotor arm being vertically-separated for removably and replaceably receiving therebetween receptacle-supporting pivot structure, and said sling seat forming bearing means for receiving the receptacle-supporting pivot structure.

4,435,169

CENTRIFUGE ROTOR HAVING A CLOSABLE WINDSHIELD

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,907
Int. Cl.³ B04B *5/02*
U.S. Cl. 494—20 **14 Claims**



1. A rotor for a swinging bucket centrifuge comprising:
a shaft;
a plurality of rotor buckets pivotally mounted to the shaft, the buckets being pivotable from a rest position to an operating position;
an upper windshield portion attached to the shaft for rotation therewith, the outer boundary of the upper windshield portion terminating in a mating edge; and
a lower windshield portion movably mounted with respect to the shaft, the lower windshield portion having a mating edge thereon, the lower windshield portion being movable in a direction parallel to the axis of rotation of the rotor in response to a closing force generated by the rotation of the rotor to displace the lower windshield portion along the shaft and dispose the mating edges thereof into closed engagement with the mating edges on the upper windshield portion.

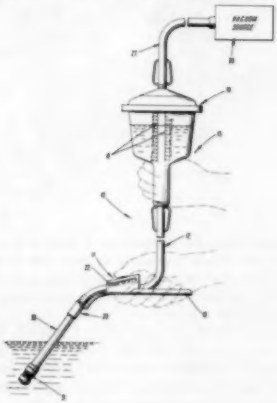
4,435,170

ASSEMBLY FOR RECEIVING AND DISCHARGING A COLLECTION OF BLOOD

Max Laszczower, Basel, Switzerland, assignor to Solco Basel AG, Switzerland

Filed Jun. 15, 1981, Ser. No. 273,711
Int. Cl.³ A61M *37/00*; A61B *19/00*
U.S. Cl. 604—4 **20 Claims**

1. An assembly operable by a single person for receiving by aspiration, storing and discharging a collection of blood to the same patient, said assembly comprising:
(a) a single vessel means for collection and dispensing having a structural configuration effective to be held in one hand of an operator and further effective for receiving and storing blood, said vessel means having a plurality of chamber means for alternate collection and dispensing of the aspirated blood and having inlet and outlet means disposed at opposite ends thereof, one of said chamber means having a lesser diameter than the other chamber means,
(b) a flexible tube removably connected to one of the inlet or outlet means,
(c) fluid flow aspirating regulating means removably disposed on the said flexible tube at a location spaced from said collection vessel means, said flow regulating means including coupling means rigidly mounted to one end of a support element means to support the flexible tube and handle means disposed at the other end of said element means, said handle means having a structural configuration effective to be held simultaneously in the other hand of the operator while said lesser diameter chamber means of the vessel means is being held in said one hand of the operator while the flow of blood is simultaneously regulated by the fluid flow regulating means,



(d) said flexible tube being removably connected to one end of said coupling means and the other end of said coupling means including an opening for directing liquid therethrough into and out of said flexible tubing,
(e) said fluid flow regulating means including a pair of walls upwardly extending from the support element at a location between the handle means and the coupling means, roller means movably mounted with respect to the pair of walls and being effective to control the amount of fluid flowing in a flexible hose disposed between said roller and the support element.

4,435,171

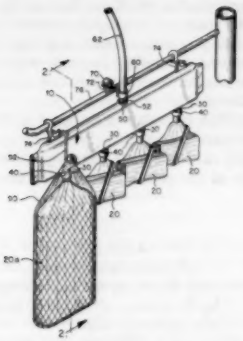
APPARATUS TO BE WORN AND METHOD FOR REMOVING FLUID FROM A LIVING SUBJECT

Edward M. Goldberg, 225 Maple Hill Rd., Glencoe, Ill. 60022, and Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077

Continuation of Ser. No. 45,294, Jun. 4, 1979, abandoned. This application Sep. 30, 1981, Ser. No. 307,188
Int. Cl.³ A61M *31/00*
U.S. Cl. 604—49 **13 Claims**

1. A method for collecting body liquids comprising the steps of:
(a) connecting a sterile, liquid receiving, device to a source of draining body liquids, said device including a manifold means for connection to the source of draining body liquids and a plurality of sterile containers connected to and below said manifold, each of said containers having a valve associated therewith which is selectively manually operable to either open gravity flow of liquids from the manifold to the container or to isolate the container from the manifold;
(b) positioning the valves to cause the body liquids to flow by gravity from the manifold into a preselected container;
(c) repositioning the valves to isolate said preselected container from the manifold;
(d) removing said preselected container with liquids therein from the manifold so as to leave the associated valve

coupled to the manifold, thereby separating the preselected container and the body liquids contained therein from the manifold without opening the manifold during



said transfer of liquids to atmosphere or contamination; and

(e) repeating steps (b) through (d) with a second preselected container included in the drainage receiving device.

4,435,172

ABSORBENT ARTICLE HAVING ENHANCED BLOOD ABSORPTION

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 22, 1982, Ser. No. 421,680
Int. Cl.³ D02G *3/00*; A61S *13/16*
U.S. Cl. 604—368 **13 Claims**

1. A water-swellable hydrophilic polymer article containing an effective amount of a water soluble amido compound having the formula

$$H_2N—X—NH_2$$

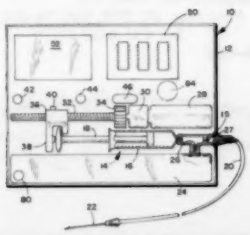
where X is —CO—, —CS—, —SO— or —SO_2—, and an effective amount of a non-ionic surfactant which are effective to improve the blood absorption rate of said article.

4,435,173

VARIABLE RATE SYRINGE PUMP FOR INSULIN DELIVERY

George G. Siposs, Costa Mesa, Calif., and Jerry B. Christian, St. Louis, Mo., assignors to Delta Medical Industries, Costa Mesa, Calif.

Filed Mar. 5, 1982, Ser. No. 355,102
Int. Cl.³ A61M *5/20*
U.S. Cl. 609—155 **12 Claims**



1. A variable rate pump for insulin delivery comprising:

a piston pump having an output for connection for delivery of medication to a patient, said piston pump having a piston therein;

electrical motor drive means connected to said piston to move said piston in said pump to dispense medication from said pump, said electric motor means comprising a pulse-driven electric motor having an output shaft, said output shaft being connected to a lead screw, a nut on said lead screw to move axially of said lead screw when said lead screw rotates, said nut being in engagement with said plunger to move said plunger as said motor rotates, a wheel connected to rotate with said lead screw, a plurality of magnetic poles on said wheel, said motor drive means including a pulse switch, said pulse switch being a magnetically controlled switch mounted directly adjacent said wheel and controlled by said wheel to produce signal pulses as said motor moves said plunger;

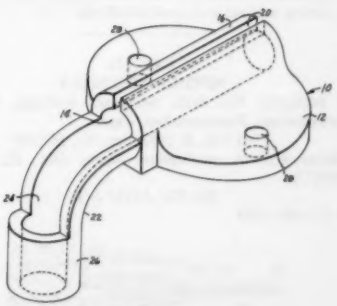
control means for controlling said motor, said control means having pulse interval selection means for producing a base command pulse rate which is proportional to the desired medication dispensing command rate, said pulse switch being connected to said motor control means so that the pulses produced as said motor moves said piston are counted by said control means and are compared to the command pulses delivered for controlling said motor, said base rate selection means being manually selectable, said control means also including a bolus control means connected to deliver a preselected number of bolus command pulses to said motor drive means for the delivery of a preselected amount of medication.

4,435,174

CATHETER GUIDE

Russell J. Redmond, Santa Barbara, and Donald L. Hannula, Goleta, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 12, 1982, Ser. No. 367,816
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—174 **13 Claims**



1. A catheter guide comprising:

a base having a channel with a first portion of the channel which extends across the base for receiving a catheter;

an outwardly and arcuately extending member on the base having a second portion of the channel which extends along such member;

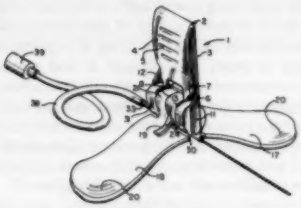
a first retaining means on the base for retaining a catheter within the first portion of the channel; and

a second retaining means on the arcuately extending member for retaining such catheter within the second portion of the channel.

4,435,175
INFUSION NEEDLE CARRIER

G. Burton Friden, 2200 Broad St., Colmar, Pa. 18915

Filed Sep. 11, 1981, Ser. No. 301,190
Int. Cl.³ A61M 5/00
U.S. Cl. 604—177 21 Claims

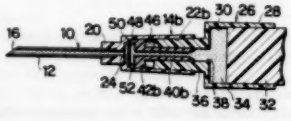


1. An infusion needle carrier comprising:
a body member, said body member including at least one body hinge block means;
an infusion needle firmly affixed to said body member;
a laterally extending support base portion affixed to said body member for selective movement with respect to said body member;
a control member affixed to said body member, said control member having two opposed sides and having a manually squeezed condition in which said opposed sides are forced towards each other and an unsqueezed condition;
camming means on said control member, said camming means being selectively operatively associated with said support base portion, the engagement condition of said camming means being operatively responsive to said squeezed and unsqueezed conditions of said control member;
whereby, when said control member is in said squeezed condition, said camming means are adapted to release said body member and said support base portion from mutual locked engagement thereby disposing them in an unset non-locked condition with respect to each other, and, when said control member is in said unsqueezed condition, said support base portion and said body member are in a set locked condition with respect to each other, said engagement condition of said camming means thereby determining said set and unset condition.

4,435,176
NEEDLE ASSEMBLY

Soji Ishikawa, No. 6-22, Miyazaki 6-chome, Takatsu-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Feb. 9, 1982, Ser. No. 347,160
Claims priority, application Japan, Oct. 22, 1981, 56-156380[U]
Int. Cl.³ A61M 5/32
U.S. Cl. 604—190 3 Claims

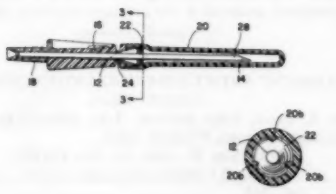


1. A needle assembly for use with a hypodermic syringe including a syringe barrel with a snout formed at its leading end, said snout being tapered towards its tip end and having a hole therein, which comprises:
a needle having a longitudinal bore extending throughout its length;
a needle holder receiving the needle at its one end and having a flared bore therein at its other end, said flared bore being shaped and sized to be press fitted over the tapered snout of the syringe barrel, said needle holder having a narrow hole in the needle receiving section which communicates with the flared bore;
a hollow pipe fixed in the flared bore at the innermost area thereof by means of a bulged portion formed at a base thereof, said pipe being shaped and sized to be inserted in the snout hold and having a passage which communicates with the needle bore through the narrow hole in the needle holder; and
a plate-like filter provided at the area in the needle holder which communicates with the needle and the pipe, the filter being carried by annular projections formed on the end walls of the pipe and the flared bore of the needle holder.

4,435,177
NEEDLE ASSEMBLY

Bruce N. Kuhlemann, Hayward; Kalman Horvath, Concord, and Prentice C. Wharff, Oakley, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Jun. 9, 1982, Ser. No. 386,549
Int. Cl.³ A61M 5/32
U.S. Cl. 604—263 14 Claims

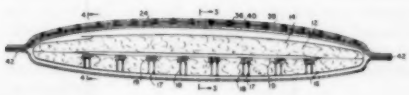


1. A needle assembly comprising a needle, a needle-retaining portion, a removable needle protector portion, and a resilient member for removing liquid from the surface of said needle, said liquid-removing member being contained within and removable with said needle protector portion and being positioned around a portion of, and disposed rearward of the point of, said needle, said liquid-removing member further having a needle-accommodating opening with an inner diameter approximately that of the outside diameter of the needle and outer cross sectional dimensions such that at least one of the dimensions is less than the internal cross sectional dimension of the protector, thereby providing a passageway for facilitating steam sterilization rearward of the liquid-removing member.

4,435,178
DISPOSABLE ABSORBENT PRODUCT HAVING AN EMBOSSED PAD CONTAINING A GEL FORMING COMPOUND

Harry G. Fitzgerald, Green Bay, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,155
Int. Cl.³ A61F 13/16
U.S. Cl. 604—365 1 Claim



1. A disposable product comprising an absorbent core having a corrugated tissue sandwiched between two layers of fluffed pulp, upper and lower layers of wadding above and

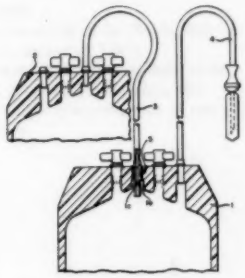
below said absorbent core, a fluid impervious sheet wrapped about said upper wadding layer and said absorbent core and having edges bonded to said lower wadding layer, and a nonwoven sheet material wrapped about said wadding, core, and fluid impervious sheet, the lower layer of said layers of fluffed pulp facing the wearer and being provided with embossed recesses therein, said recesses extending about four-fifths the thickness of said lower layer of fluffed pulp and the material of said lower layer of fluffed pulp above said re-esses being highly compressed, said recesses being coated with a stabilizing binding material selected from polymers derived from poly acrylo nitrile, poly acrylamide and starches grafted therewith, said lower layer of fluffed pulp having grooves in the lower layer interconnecting said recesses.

4,435,179

BLOOD BAGS WITH INTERCONNECTING SYSTEM

Wolfram H. Walker, Rödermark, Fed. Rep. of Germany, assignor to Biotest-Serum-Institut GmbH, Frankfurt-Niederrad, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,769
Int. Cl.³ A61M 5/00
U.S. Cl. 604—410 **5 Claims**



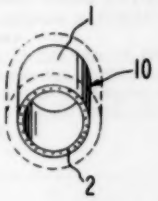
1. A blood bag assembly comprising at least first and second bags and tubular means connecting the interiors of the bags, the first bag having a sealed flattened edge, the interior of said first bag projecting upwardly into the region of the sealed edge to form a recess, the connecting means including a coupling composed of a connecting portion, a break-off portion and a fracture line located within the recess, the connecting portion being joined directly to said first bag so that it is situated directly at the upper edge of said first bag and terminating substantially evenly therewith, the break-off portion within said recess upon breaking off falling into the inside of the bag and leaving the connecting portion open for free passage of liquid across its full cross-sectioned area.

4,435,180

ELASTOMERIC ACTIVE AGENT DELIVERY SYSTEM AND METHOD OF USE

Harold M. Leeper, Mountain View, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed May 25, 1982, Ser. No. 381,994
Int. Cl.³ A61K 9/00
U.S. Cl. 604—896 **14 Claims**



1. A transdermal therapeutic system for delivering active agent to the skin comprising body member surrounding means, at least a portion of said means being formed from an elastomeric matrix having active agent dispersed therethrough at a concentration greater than the saturation concentration of said agent in said elastomer, the skin proximal surface area of said matrix being smaller in its relaxed condition than in its condition of use when applied around a body member whereby the elastomeric matrix creates a compressive force on said body member sufficient to establish and maintain active agent transferring contact between said transdermal therapeutic system and the skin of said body member.

4,435,181

CONCENTRATED FLOWABLE STORAGE STABLE AQUEOUS FORMULATIONS OF COLD DYEING FIBER REACTIVE DYESTUFFS

Robert G. Hoguet; Dietmar Kalz; Thomas J. Thomas; Henry T. Whetsell, all of Summerville, S.C.; Joachim Wolff, Cologne, Fed. Rep. of Germany; Konrad Nonn, and Karl-Heinz Wolf, both of Leverkusen, Fed. Rep. of Germany, assignors to Mobay Chemical Corporation, Pittsburgh, Pa. and Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,426

Int. Cl.³ D06P *67/00*

U.S. Cl. 8—527 **14 Claims**

1. A storage stable concentrated fluid aqueous dispersion of at least one water soluble cold dyeing fiber reactive dyestuff having superior kinetic solubility comprising

(A) between about 10 and 50 wt. % of at least one dyestuff having an average particle size less than about 100 microns of the formula:

$$(MO_3S)_n—Z—\underset{\displaystyle R^1}{\overset{\displaystyle |}{N}}—R \qquad (1)$$

wherein

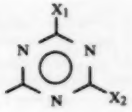
M=the cation of Li, Na, K, NH_3 or an organic amine

n=an integer of 1 to 5

Z=a dyestuff chromophore system

R^1=H or a C_1 to C_4 alkyl, and

R=a fiber reactive group of one of the following structures: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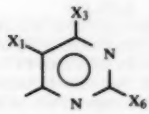
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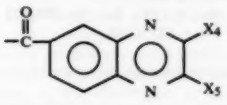

(4)

wherein

X_1=Cl, F, but F if X_2 not F or Cl

X_2=Cl, F, NH_2, NHR^2, OR^2, SR^2, $—CH_2R^2$

X_3=Cl, F, CH_3

X_4=Cl, F

X_5=Cl, F, CH_3 X_6=Cl, F

with the proviso that one of X_3 and X_6 is F,

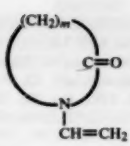
and wherein

R^2=alkyl substituted by OH, SO_3H, COOH, or C_1–C_4-alkoxy,

aryl substituted by SO_3H, C_1–C_4-alkyl, or C_1–C_4-alkoxy,

aralkyl substituted by SO_3H, C_1–C_4-alkyl, or C_1–C_4-alkoxy;

(B) between about 2 and 15 wt. % of dispersant selected from the group consisting of anionic dispersing agents and vinyl polymers synthesized from monomers of the formula


(5)

in which m is an integer from 3 to 5; and

(C) between about 4 and 25 wt. % of water soluble electrolyte said dispersion having a viscosity at 20° C. of less than 5,000 cps at 20 rpm.

4,435,182

PROCESS FOR THE EXTRACTION OF SOLID MATERIAL FROM SOLUTION BY CRYSTALLIZATION

Zoltan Banos; Endre Vereczkey; György Kerey; Peter Rudolf; Istvan Takacs; Jozsef Felmeri, and Gyula Bosits, all of Budapest, Hungary, assignors to Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 131,826, Mar. 19, 1980, Pat. No. 4,357,306. This application Aug. 6, 1981, Ser. No. 290,509

Claims priority, application Hungary, Mar. 21, 1979, RI 704

Int. Cl.³ B01D *9/02*

U.S. Cl. 23—295 R **6 Claims**

1. In a process for the extraction of dissolved solid material from a solution by crystallization in which a mother phase in a metastable range in which crystallization begins is formed, said mother phase is cooled to increase crystal growth and form a crystal slurry, and crystals are separated from said slurry, the improvement which comprises the steps of:

(a) separating said crystals from said crystal slurry by continuous filtration of said slurry to form a fraction containing a required grain size of crystals and a fraction of mother liquor containing crystals of a grain size less than said required size;

(b) continuously mixing the mother liquor from step (a) with fresh solution containing dissolved solids;

(c) allowing the crystals from the mother liquor and the fresh solution to settle and form said mother phase and a further mother liquor free from crystals, and discharging said further mother liquor;

(d) cooling and simultaneously moving the mother phase formed in step (c) to increase crystallization thereof and form said crystal slurry, the cooling and simultaneous moving of said mother phase formed in step (c) being effected by passing it along cooled surfaces from one end to another of an elongated body while swinging said body around an axis; and

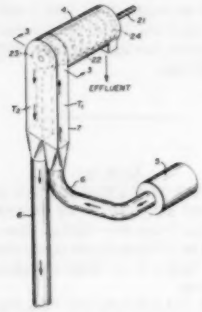
(e) feeding the crystal slurry formed in step (d) to filtration in step (a).

4,435,183

PROCESS FOR RAPID DEWATERING AND DRYING OF CALCIUM SULFATE HEMIHYDRATE

Donald O. Baehr, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Feb. 16, 1982, Ser. No. 349,231
Int. Cl.³ B01D *1/14;* **C01F** *11/46;* **C04B** *11/02*
U.S. Cl. 23—293 R **6 Claims**



1. A process for rapid mechanical dewatering and thermal drying of a calcium sulfate hemihydrate slurry in a centrifuging and flash drying operation comprising:

enclosing the discharge end of a centrifuge bowl within a high velocity, high volume, heated air stream of a flash dryer;

passing high velocity, high volume heated air through the dryer;

ejecting damp hemihydrate solids directly from the centrifuge bowl lip into the high velocity, high volume heated air stream of the flash dryer;

and suspending the hemihydrate solids in the high velocity, high volume heated air stream until dry.

4,435,184

METHOD OF RECOVERING BORIC ACID FROM WASTE-WATER CONCENTRATES OF NUCLEAR PLANTS

Heinrich J. Schroeder, Biblis; Rainer Ambros, Biblis-Wattenheim; Gottfried Paffrath, Hohen Sülzen, and Norbert Brenner, Bürstadt, all of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitätswerk AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 215,151, Dec. 11, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,094
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950601
Int. Cl.³ B01D *9/02;* **C01B** *35/10*
U.S. Cl. 23—300 **3 Claims**

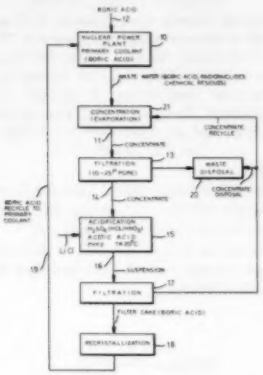
1. A method of recovering boric acid from a nuclear power plant waste-water concentrate containing boric acid, radionuclides and chemical residues, comprising the steps of:

removing solids from said nuclear power plant waste-water concentrate by filtration;

acidifying the concentrate to a pH of about 2 with at least one acid selected from the group which consists of sulfuric acid, hydrochloric acid, nitric acid and acetic acid, adding a boric-acid-solubility reducing salt thereto, and lowering the temperature as the resulting solution to precipitate boric acid;

recovering the precipitated boric acid by filtering upon a filter of a pore size of 10 to 25 microns;

taking the precipitated boric acid into solution in hot water; and



cooling the solution to recrystallize the boric acid out of the latter solution.

4,435,185

FURNACE FUEL

Thomas C. Kenny, Syosset, and John P. Plunkett, Smithtown, both of N.Y., assignors to Horizon Chemical, Inc., Freeport, N.Y.

Filed Oct. 1, 1979, Ser. No. 81,017
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—68 **16 Claims**

1. A liquid hydrocarbon furnace fuel having improved combustion properties by the addition thereto as a combustion catalyst of from about 1.0×10^{-6} to about 1.0×10^{-3} parts by weight of at least one isomer of dinitrotoluene.

4,435,186

ALCOHOL FUELS CONTAINING WEAR-INHIBITING AMOUNTS OF REACTION PRODUCTS OF AMINES AND PHOSPHATE ESTERS OF PHOSPHONIC ACIDS

Rodney L. Sung, Fishkill; Benjamin J. Kaufman, and William M. Sweeney, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 3, 1982, Ser. No. 374,572
Int. Cl.³ C10L *1/26*
U.S. Cl. 44—53 **40 Claims**

1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0–50 volumes per volume of alcohol; and

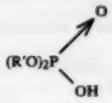
(b) a minor wear-inhibiting amount 0.2–10 w % of, as a wear-inhibiting additive, a reaction product of

(i) an amine

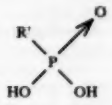
$$R_a\text{—}N[(R''O)_bH]_c$$
$$\quad\quad H_{3-(a+c)}$$

wherein R contains 1–30 carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, and aryl hydrocarbon groups, R'' is a divalent hydrocarbon group containing 1–30 carbon atoms and is selected from the group consisting of alkylene, alkenylene, alkarylene, aralkylene, cycloalkylene, and arylene hydrocarbon groups, a and c are each integers 1–2, a plus c is 2–3, and b is an integer 1–5 with

(ii) a phosphate ester



or a phosphonic acid



wherein R' contains 1–30 carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, and aryl.

4,435,187

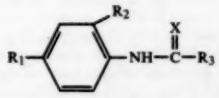
FUEL AND LUBRICANT COMPOSITIONS FOR OCTANE REQUIREMENT REDUCTION

L. B. Graiff, and T. E. Kiovsky, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

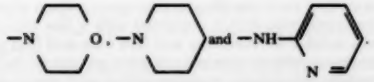
Filed Dec. 31, 1981, Ser. No. 336,221
Int. Cl.³ C10L 1/18, 1/22, 1/24
U.S. Cl. 44—63 **10 Claims**

1. A fuel composition wherein a major portion of the fuel comprises hydrocarbons boiling in the gasoline range and incorporating a minor amount of an additive composition which exhibits octane requirement reduction properties, said additive composition comprising a substituted urea selected from 4-[N-(2,4-xylyl)carbamoyl] morpholine, 1-[N-(2,4-xylyl)-carbamoyl] piperidine and 1-(2-pyridyl)-3-(2,4-xylyl)-2-thiourea.

7. A method of operating a spark ignition internal combustion engine which comprises burning in said engine a motor fuel comprising a gasoline boiling range hydrocarbon mixture containing an additive composition comprising a minor amount of substituted urea represented by the formula:



in which X is an oxygen or sulfur atom, R_1 and R_2 are hydrocarbyl radicals having from 1 to 3 carbon atoms, and R_3 is selected from the group consisting of

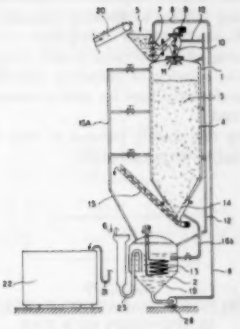


4,435,188

INSTALLATION FOR PREPARING COMBUSTIBLE GASES THROUGH FERMENTATION

Jean-Marie Dedenon, 10 Rue du 8 Mai, 77370 Nangis, France, and Denis Rassak, 15 Rue Georges Blandon, 78430 Louveciennes, France

PCT No. PCT/FR81/00053, § 371 Date Dec. 17, 1981, § 102(e) Date Dec. 17, 1981, PCT Pub. No. WO81/03030, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 17, 1981, Ser. No. 333,875
Claims priority, application France, Apr. 21, 1980, 80 08855
Int. Cl.³ C02F 3/28
U.S. Cl. 48—111 **4 Claims**



1. Installation for the preparation of fuel gases by anaerobic fermentation, comprising

a first tank (**1**) for the treatment of fermentable solids or concentrated liquids containing fermentable solids and having a solid content greater than 16%, said first tank being provided with a perforated partition means to permit drainage of liquid therethrough over almost the entire height of said first tank and allowing gases and liquids to circulate therethrough while holding solids from passing therethrough;

a second tank (**2**) for the treatment of dilute fermentatable liquids the dry content of which is less than 10%, said second tank having a heating coil (**13**) therein;

fermentable solids feeding means connected to the top of said first tank for feeding fermentable solids to said first tank, said fermentable solids feeding means comprising a chopper (**7**), a recirculation intake pipe (**8**) connected between said second tank and said feeding means for recycling liquor from said second tank to said fermentable solids feed device, and a conveyor means (**25**) for conveying a mixture of the recycling liquor from said intake pipe and fermentable solids from said chopper to said first tank;

means (**6**) for introducing fermentable liquid to said second tank;

means (**14**, **15**) for collecting fermentation residue coming from said first tank;

connecting pipes (**16***a*, **16***b*) extending between said first tank and said second tank for passing liquids from said first tank to said second tank from several different levels of said first tank; and

a collector pipe (**12**) extending from the upper portion of said first tank and said second tank for collecting gases produced by fermentation.

4,435,189

METHOD OF PREPARING ROUGH TEXTURED METAL COATED ABRASIVES AND PRODUCT RESULTING THEREFROM

Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Jan. 15, 1982, Ser. No. 339,575
Int. Cl.³ C23C 3/02
U.S. Cl. 51—295 7 Claims

1. An improved nickel coated crystal of diamond or cubic boron nitride which is made by the steps of:

(a) treating said crystals with an acidic solution of palladium chloride; and

(b) stirring said treated crystals in an aqueous solution containing coating nickel ions and hypophosphite ions capable of reducing said nickel ions to the free metal for coating said crystals;

the improvement which comprises the additional steps of:

(i) interrupting step (b) by forming a passivated coating on the nickel-coated crystals of step (b);

(ii) reactivating said passivated coated crystals with additional acidic solution of palladium chloride whereby an array of preferential sites for nickel coating deposition is obtained; and

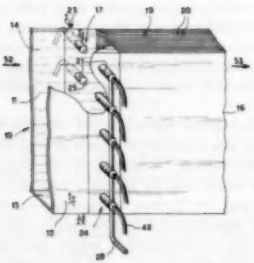
(iii) resuming the coating process of step (b) whereby a rough nickel surface is obtained.

4,435,190

METHOD FOR SEPARATING PARTICLES IN SUSPENSION IN A GAS

Joseph Taillet, Boulogne, and Serge Larigaldie, Chatenay Malabry, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed May 22, 1981, Ser. No. 266,587
Claims priority, application France, Mar. 14, 1981, 81 09646
Int. Cl.³ B03C 3/00
U.S. Cl. 55—5 5 Claims



1. A method for separating particles suspended in a gas, which comprises:

producing ions trapped by microscopic ice crystals by supersonic expansion of a moist gas stream in a supersonic nozzle including a corona discharge in a separate chamber;

injecting the ions trapped by the ice crystals into an enclosure from the nozzle causing the ice crystals to change their state in said enclosure freeing the trapped ions to create a space charge;

passing a gas containing suspended particles through the space charge thereby transferring a charge to the particles; and,

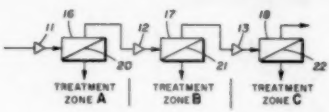
collecting the charged particles by electrostatic deposition.

4,435,191

PROCESS FOR SEPARATING AGGRESSIVE GASES FROM GAS MIXTURES

Tommy E. Graham, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 30, 1983, Ser. No. 509,823
Int. Cl.³ B01D 53/22
U.S. Cl. 55—16 9 Claims



1. A process for separating an aggressive gas from a mixture of said aggressive gas and at least one other gas, comprising

(a) passing the gas mixture through a plurality of treatment zones connected in series,

(b) in each zone first compressing the gas mixture,

(c) then in each zone bringing the compressed gas mixture into contact with a feed side of a membrane having a critical partial pressure for the aggressive gas and being more permeable to the aggressive gas than said other gas such that the aggressive gas permeates the membrane to the other side thereof to thereby decrease the partial pressure of the aggressive gas on the feed side of the membrane, said gas mixture being compressed at a temperature and to such a pressure prior to contact with the membrane that the partial pressure of the aggressive gas is a least 75 percent of said critical partial pressure and the partial pressure of the aggressive gas is not above the critical partial pressure of the aggressive gas,

(d) maintaining the gas mixture in contact with said feed side of said membrane a sufficient time to decrease the partial pressure of the aggressive gas on the feed side of the membrane to less than 40 percent of said critical partial pressure, and

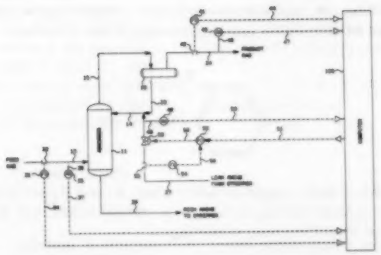
(e) passing the gas mixture through a sufficient number of treatment zones that the non-permeated gas mixture leaving the last treatment zone in said series contains less than 20 percent of said aggressive gas.

4,435,192

CONTROL OF A H_2S ABSORBER

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 24, 1982, Ser. No. 444,140
Int. Cl.³ B01D 53/14
U.S. Cl. 55—19 8 Claims



1. A method for controlling an absorption process wherein a feed gas containing H_2S is contacted with a lean absorption medium, suitable for removing said H_2S from said feed gas, in an absorption column, wherein a product gas stream having a substantially reduced concentration of H_2S with respect to said feed gas is removed from an upper portion of said absorption

column and wherein a rich absorption medium containing the H_2S removed from said feed gas is removed from a lower portion of said absorption column, said method comprising the steps of:

establishing a first signal representative of the flow rate of said lean absorption medium to said absorption column required to maintain the actual concentration of H_2S in said product gas stream substantially equal to a desired concentration;

establishing a second signal representative of the flow rate of said lean absorption medium to said absorption column required to maintain the actual H_2S concentration in said rich absorption medium at or below a high limit for the actual concentration of H_2S in the rich absorption medium;

establishing a third signal which is equal to the one of said first and second signals which is representative of the highest flow rate of said lean absorption medium; and

manipulating the flow rate of said lean absorption medium to said absorption column in response to said third signal.

4,435,193

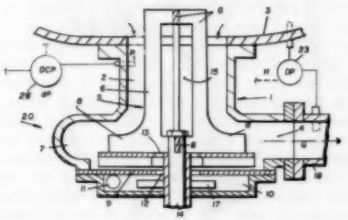
CONTROLLING OPERATION OF A CENTRIFUGAL PUMP

Johan E. Gullichsen, Siuntio, Finland; Esko Harkonen, Karlstad, Sweden; Toivo Niskanen, Hamina, Finland; Jaakko Kujala, and Voitto Reponen, both of Karhula, Finland, assignors to Kamyr AB, Karlstad, Sweden

Continuation-in-part of Ser. No. 139,162, Apr. 7, 1980, Pat. No. 4,410,337. This application Nov. 5, 1982, Ser. No. 439,600

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—21 **25 Claims**



1. A method for controlling the operation of a centrifugal pump pumping a suspension having a consistency of about 8–12 percent and containing gas, the pump having an inlet suspension pressure, a pressure head, and a suspension discharge flow rate, comprising the steps of:

(a) effecting rotation of the suspension within the pump so that a gas bubble is created in a central part of the pump;

(b) discharging gas from the gas bubble in the pump central part, at a gas discharge pressure;

(c) rotating the pump impeller at a speed sufficient to effect fluidization of the suspension, and effecting discharge of the fluidized suspension at a flow rate;

(d) determining the differential pressure between the suspension inlet pressure and the gas discharge pressure; and

(e) controlling the head and/or discharge flow rate of the pump by controlling the differential pressure determined in step (d).

18. A method for controlling the operation of a centrifugal pump pumping a liquid or suspension containing gas, the pump having an inlet liquid or suspension pressure, a pressure head, and a liquid or suspension discharge flow rate, comprising the steps of:

(a) effecting rotation of the liquid or suspension within the pump so that a gas bubble is created in a central part of the pump;

(b) discharging gas from the gas bubble in the pump central part, at a gas discharge pressure, to an air vessel;

(c) determining the differential pressure between the liquid or suspension inlet pressure and the gas discharge pressure, the gas discharge pressure measured in the air vessel;

(d) controlling the head and/or discharge flow rate of the pump by controlling the differential pressure determined in step (c); and

(e) at pump start up, or when a rapid differential pressure change is desired, feeding air at a controlled pressure and flow rate—from a source independent of the pump gas discharge—to the air vessel.

4,435,194

CIRCUIT FOR VENTILATING AND FILTERING THE MEDIUM CONTAINED IN A CONFINEMENT ENCLOSURE

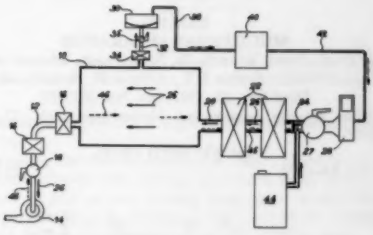
Claude Picard, Nanterre, and Bernard Saint Martin, Paris, both of France, assignors to La Calhene, Bezons, France

Continuation-in-part of Ser. No. 230,624, Feb. 2, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 372,327

Claims priority, application France, Feb. 12, 1980, 80 03067

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—96 **21 Claims**



1. A process for establishing and maintaining a vacuum within a ventilated and filtered air tight enclosure, said process comprising:

introducing a filtered medium into the enclosure through a supply pipe having a first filtering means in the supply pipe;

establishing a vacuum in the enclosure by employing an enclosure discharge pipe which discharges the medium from the enclosure in a normal flow direction and which is connected to a means for establishing the vacuum, the discharge pipe having a second filtering means, and by regulating the flow rate in the supply pipe; and

maintaining the vacuum in the enclosure in the event of a failure by sensing the pressure within the enclosure and actuating a means for maintaining the vacuum upon a predetermined rise in pressure within the enclosure; the means for maintaining the vacuum being connected to the supply pipe upstream of the first filtering means and operable to reverse the flow of the medium in the supply pipe.

4,435,195

FILTER UNIT AND IONIZING UNIT COMBINATION

Anthony Q. Testone, Lee, Mass., assignor to Static, Inc., Skippack, Pa.

Filed Jul. 22, 1982, Ser. No. 400,900

Int. Cl.³ B03C *3/01*

U.S. Cl. 55—126 **11 Claims**

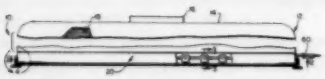
1. Apparatus for introducing filtered, ionized air into a room comprising:

(a) a filter unit including an air impervious housing having an air inlet on one face, an air discharge face opposite the air inlet, and filter material in the housing between the air inlet and the air discharge face,

(b) an ionizing unit comprising a plurality of ionizing points, means supporting said ionizing points in positions distrib-

uted across the discharge face of the filter unit comprising insulated conductor means, means capacitively coupling said ionizing points to said conductor means, and conductive tubular means having said conductor means extending therethrough,

(c) conductive frame means extending around said ionizing unit and including means for supporting said ionizing unit



therein, said frame means conforming in size and shape to the air discharge face of the filter unit, and means for electrically connecting said frame means to said conductive tubular means,

(d) means for securing said frame means to said filter unit housing at the discharge face thereof, and

(e) sealing means for preventing the passage of air between said filter unit housing and said frame means.

4,435,196

MULTIPHASE SEPARATOR

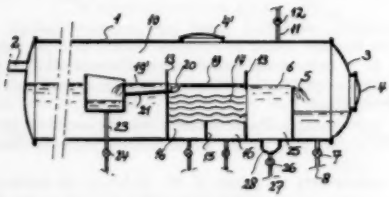
Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex Beheer B.V., Assendelft, Netherlands

Filed Feb. 22, 1982, Ser. No. 351,293

Claims priority, application Netherlands, Feb. 27, 1981, 8100955

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—174 **22 Claims**



1. A multiphase separation device, comprising a gas-tight tank with a substantially horizontal axis, which tank is provided with a supply connection for the liquid to be treated opening near one extremity of said tank into an inlet space thereof, a plurality of discharge connections for the different gaseous, liquid or solid phases, a plate separator arranged within said tank with inclined parallel corrugated plates adapted for cross-flow separation, an overflow weir arranged at the other side of said separator for determining the normal liquid level in said tank, above which a gas phase collecting space is present, extending over substantially the whole length of the tank, the discharge connections being situated so that the different components separated in the tank and in the cross-flow separator can be discharged separately from one another, in which;

said overflow weir is designed to determine the normal level of a heavier liquid phase of the liquid to be treated, discharge means for said heavier liquid phase being provided at the downstream side of said overflow weir;

said plate separator being confined between two transverse baffles extending upwards into said gas space, said baffles being provided with an inlet and an outlet window respectively;

the plates of said separator being substantially submerged below said normal level, said windows defining a substantially horizontal liquid flow through the passages between said plates, overflow means for collecting a lighter liquid phase separated in said passages and floating as a floating layer on the liquid between said baffles being provided above said separator, said baffles extending sufficiently above said normal level for restraining said floating layer between said baffles;

additional overflow means being provided in said inlet space for removing a floating layer of said lighter liquid phase separated from said liquid in said inlet space;

discharge means being provided for discharging a heaviest phase separated from said liquid in said passages and collected in the space below said separator; and

additional discharge means being provided for discharging said heaviest phase separated in the space between the downstream baffle and said overflow weir.

4,435,197

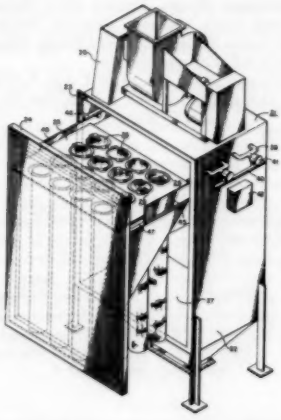
BAGHOUSE FILTER

Pramodh Nijhawan, and William W. Avera, both of Winston-Salem, N.C., assignors to The Bahnson Company, Winston-Salem, N.C.

Filed Apr. 9, 1982, Ser. No. 367,046

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—341 R **19 Claims**



1. In a bag filter comprising a housing having a dirty-gas inlet, a clean gas outlet, a partition having an operative position in the interior of said housing separating said inlet and outlet, said partition having a plurality of filter openings therein affording passage of gaseous medium from said inlet to said outlet, each of said filter openings having a filter unit mounted therein, said filter units comprising elongated bags of filter material, said partition and said units comprising a filtering assembly separating particulate matter from the gaseous medium flowing from the inlet to the outlet, said filtering assembly being mounted for displacement from said operative position into a second position affording ready removal and replacement of the filter units in said filter openings; the improvement wherein

said housing has an access opening in a front wall thereof, said access opening being coextensive with an outline of said filtering assembly to enable at least a substantial part of said filtering assembly to pass through said access opening upon displacement between said operative and said second positions,

a door closing said access opening when said filtering assembly is in said operative position,

said filtering assembly having one end mounted on said door so as to effect displacement of said assembly with the door between said operative and second positions, and a free end opposite said one end, and

door sealing elements disposed between said door and the housing around the periphery of said opening, and end sealing elements disposed between the opposite free end of the filtering assembly and a rear wall of the housing opposite said opening, said elements being positioned in sealing engagement by displacement of said door and filtering assembly from said second position into said operative position.

18. In a bag filter comprising a housing having a dirty-gas inlet, a clean gas outlet, a partition having an operative position in the interior of said housing separating said inlet and outlet, said partition having a plurality of generally circular filter openings therein affording passage of gaseous medium from said inlet to said outlet, each of said filter openings having a filter unit mounted therein, said partition and said units comprising a filtering assembly separating particulate matter from the gaseous medium flowing from the inlet to the outlet, said filtering assembly being mounted for displacement from said operative position into a second position affording ready removal and replacement of the filter units in said filter openings; the improvement wherein

each of said filter openings has recess means along its periphery;

each of said filter units includes means mounting said filter unit in said filter opening for removal and replacement from the inlet side of the partition when said assembly is in said second position;

said mounting means for each of said filter units comprises a collar encircling said unit at one end, said collar having a cylindrical portion with an outer diameter corresponding to the diameter of said filter opening, at least two locking tabs projecting outwardly from said cylindrical portion a distance to overlap the circular outline of said opening, the projection and circumferential width of said tabs being less than the depth and circumferential width of the recess means to enable passage of said tabs through said recess means upon axial displacement of said filter unit in said opening and to enable engagement of the tabs with the outlet side of said partition upon rotary displacement of said filter unit about the axis of said opening; and sealing means comprising a circlet of resilient elastomeric material anchored to said cylindrical portion and projecting outwardly from said cylindrical portion at a distance from said tabs to seal against the inlet side of said partition, said sealing means having a flared lip projecting radially and axially in the direction of said tabs circumscribing said opening and said recess means to sealingly engage the surface of said partition on the inlet side thereof; and

each filter unit further includes a filter bag open at one end and having the open end encircling said collar, circumferential means projecting radially outward from said collar between the end of said filter bag and the tabs, said circlet having its flared lip disposed between said circumferential means and said tabs with a portion below said flared lip sealing against said circumferential means and an extended portion beyond said circumferential means mounted between the open end of said filter bag and said collar to provide a seal therebetween.

4,435,198

SEPARATION OF NITROGEN FROM NATURAL GAS

Michael L. Gray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 24, 1982, Ser. No. 351,727
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—28 **17 Claims**

1. A process for liquifying and reducing the nitrogen content of a normally gaseous natural gas feed comprising predominantly methane with significant amounts of nitrogen and in its vapor phase at an elevated pressure, comprising:

(a) cooling said natural gas feed, in a first cooling step comprising at least one cooling stage, to liquify the same;

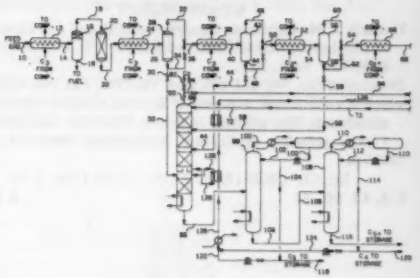
(b) separating the thus liquified natural gas feed, in a first separation step, into a first vapor phase, containing a major portion of said nitrogen, and an unvaporized first liquid phase, comprising liquified natural gas;

(c) further cooling at least a part of the thus separated first vapor phase, in a second cooling step;

(d) separating the thus cooled first vapor phase, in a second separation step, into a second vapor phase, further enriched in nitrogen, and an unvaporized second liquid phase, comprising liquified natural gas;

(e) recovering the thus separated second vapor phase as a product of the process;

(f) expanding the thus separated first liquid phase and the thus separated second liquid phase, in at least one expansion step, to produce a single vapor-liquid mixture therefrom;



(g) passing the thus separated first vapor phase in indirect heat exchange with the thus produced vapor-liquid mixture, in said second cooling step, prior to said second separation step, to provide at least part of the cooling of said first vapor phase in said second cooling step;

(h) separating said vapor-liquid mixture, in a third separation step, into a third vapor phase, comprising methane containing additional nitrogen, and a third liquid phase, comprising liquified natural gas; and

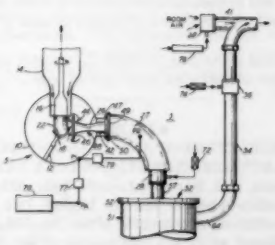
(i) recovering the thus separated third liquid phase as the liquified natural gas product of the process.

4,435,199

EXHAUST SYSTEM FOR A VAPOR DEPOSITION CHAMBER

Eugene Potkay, Hamilton Township, Mercer County, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,630
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.12 **4 Claims**



1. A method of fabricating a lightguide soot-boule in a vapor-phase axial deposition chamber, comprising the steps of:

directing a stream of glassy soot, from a soot deposition torch, towards a growing soot-boule, to deposit at least a portion of the soot stream thereon;

exhausting undeposited soot from the chamber through a

hollow, substantially cylindrical exhaust tube having a constricted central portion with a flared intake and a gradually turned back end projecting into the chamber and an output end connected to an exhaust line; and

removing the soot with an extracting means, connected to the exhaust line, having a plurality of tubular members mounted concentrically to provide a circuitous path to exhaust soot to extract particles therefrom while isolating the deposition chamber from downstream pressure fluctuations.

4,435,200
METHOD OF PREPARING PRECISION PRESSED GLASS OBJECT

Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 161,196, Jun. 19, 1980, Pat. No. 4,348,484, which is a continuation-in-part of Ser. No. 119,324, Feb. 7, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,533

Claims priority, application Netherlands, May 18, 1979, 7903914

Int. Cl.[3] **C03B** *19/00, 23/00, 29/00;* **C03C** *3/16*

U.S. Cl. 65—64 **6 Claims**

1. A method of forming a precision pressed object of glass comprising the steps of

precisely grinding a cube of glass having a composition consisting essentially of 45–55 mol.% P_2O_5, 15–40 mol.% BaO, 5–35 mol.% PbO, 5–15 mol.% Li_2O, 0–2 mol.% Al_2O_3, and 0–6 mol.% F in the form of fluoride wherein up to 25% of BaO may be replaced by an equimolar quantity of at least one of CaO, MgO and SrO, and up to 25% of Li_2O may be replaced by an equimolar quantity of at least one other alkali metal oxide;

positioning said cube on a carrier;

preheating said cube to a temperature 20°–60° C. above the American softening point to obtain a polishing effect;

preheating dies of a glass forming device to a temperature 10°–40° C. above the American softening point of said glass;

inserting said preheated cube and carrier into said dies; and

closing said dies to form a precision pressed object of said glass.

4. A method according to claim 1, wherein said precision pressed object of said glass is an optical lens.

4,435,201
MANUFACTURING AND USING NITROGEN FERTILIZER SOLUTIONS ON A FARM

John A. Eastin, P.O. Box 389, Lincoln, Nebr. 69140

Continuation-in-part of Ser. No. 100,825, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 824,289, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 728,788, Oct. 1, 1976, abandoned, which is a division of Ser. No. 581,050, May 27, 1975, abandoned. This application May 18, 1982, Ser. No. 379,466

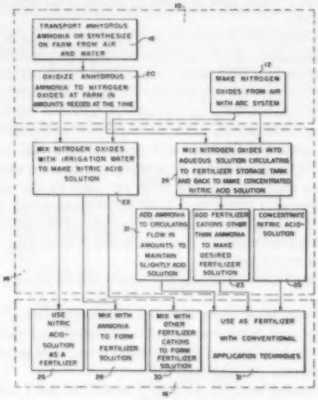
Int. Cl.[3] **C05C** *3/00*

U.S. Cl. 71—54 **6 Claims**

1. A method of nitrogenous fertilizing of a farm comprising the steps of:

oxidizing between 12.5 pounds and 146 pounds of nitrogen each hour in a continuous process by burning ammonia;

bringing the nitrogen oxides in contact with a surface catalyst and with flowing water at a rate in the range of five gallons per minute to twenty gallons per minute in a continuous process on a surface catalyst as the nitrogen oxides are being formed to form a dilute solution of nitric acid as the nitrogen oxides are formed; and


TRANSPORT ANHYDROUS AMMONIA OR SYNTHESIZE ON FARM FROM AIR AND WATER
OXIDIZE ANHYDROUS AMMONIA TO NITROGEN OXIDES AT FARM IN AMOUNTS NEEDED AT THE TIME
MAKE NITROGEN OXIDES FROM AIR WITH ARC SYSTEM
MIX NITROGEN OXIDES WITH IRRIGATION WATER TO MAKE NITRIC ACID SOLUTION
MIX NITROGEN OXIDES INTO AQUEOUS SOLUTION CIRCULATING TO FERTILIZER STORAGE TANK AND BACK TO MAKE CONCENTRATED NITRIC ACID SOLUTION
ADD AMMONIA TO CIRCULATING FLOW IN AMOUNTS TO MAINTAIN SLIGHTLY ACID SOLUTION
ADD FERTILIZER CATIONS OTHER THAN AMMONIA TO MAKE DESIRED FERTILIZER SOLUTION
CONCENTRATE NITRIC ACID SOLUTION
USE NITRIC ACID SOLUTION AS A FERTILIZER
MIX WITH AMMONIA TO FORM FERTILIZER SOLUTION
MIX WITH OTHER FERTILIZER CATIONS TO FORM FERTILIZER SOLUTION
USE AS FERTILIZER WITH CONVENTIONAL APPLICATION TECHNIQUES

using the dilute solution of nitric acid in a process leading to and including the application of nitrogenous fertilizer on a farm.

4,435,202
PLANT GROWTH REGULATOR

Masuo Koizumi, Tokyo; Norio Shirakawa, Saitama; Hiromi Tomioka, Tokyo; Masaki Takeuchi; Masanori Okada, both of Saitama; Masahiro Yoshimoto; Yasushi Murakami, both of Tokyo, and Yoshitaka Iwane, Kanagawa, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

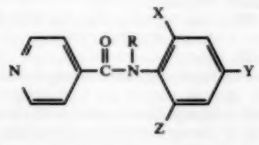
Division of Ser. No. 137,894, Apr. 7, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,023

Claims priority, application Japan, Apr. 19, 1979, 54-47299

Int. Cl.[3] **A01N** *43/40*

U.S. Cl. 71—76 **6 Claims**

1. A method of stunting growth of a grassy plant, without causing phytotoxicity, which comprises applying to its foliage, or to soil containing pre-emergent seeds thereof, a compound of the formula



wherein R is hydrogen or lower alkyl, X is hydrogen or a halogen, Y is hydrogen, a halogen, methyl or nitro, and Z is benzoyl, in an amount of from 50 to 2,000 g per 10 ares.

4,435,203

OPTICAL ISOMER OF TRIAZOLYLPENTENOLS, AND THEIR PRODUCTION AND USE AS FUNGICIDE, HERBICIDE AND/OR PLANT GROWTH REGULANT

Yuji Funaki, Toyonaka; Yukio Yoneyoshi, Otsu; Yukio Ishiguri, and Kazuo Izumi, both of Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

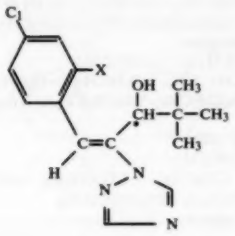
Filed Dec. 7, 1981, Ser. No. 328,191

Claims priority, application Japan, Dec. 15, 1980, 55-177704; Dec. 22, 1980, 55-182407

Int. Cl.[3] A01N *43/64;* C07D *249/08*

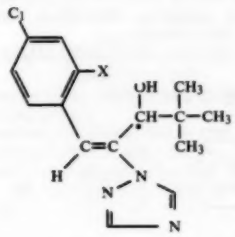
U.S. Cl. 71—76 10 Claims

1. A substantially pure triazolyl alcohol derivative represented by the general formula:



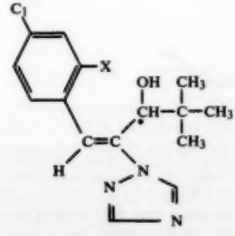
wherein X represents a hydrogen atom or a chlorine atom and the asterisk indicates an asymmetric carbon atom, and having an optical activity of (−) or (+).

6. A fungicidal composition comprising an inert carrier and as an active ingredient, a fungicidally effective amount of a substantially pure triazolyl alcohol derivative represented by the general formula:



wherein X represents a hydrogen atom or a chlorine atom and the asterisk indicates an asymmetric carbon atom and having an optical activity of (−).

7. A plant growth regulatory or herbicidal composition comprising an inert carrier and as an active ingredient, a plant growth regulatory effective or a herbicidally effective amount of a substantially pure triazolyl alcohol derivative represented by the general formula:



wherein X represents a hydrogen atom or a chlorine atom and the asterisk indicates an asymmetric carbon atom and having an optical activity of (+).

4,435,204

N-ORGANO-PHOSPHONOMETHYLGLYCINE-N-OXIDES AND THE USE THEREOF TO INCREASE THE SUCROSE CONTENT OF SUGARCANE

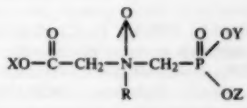
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 613,707, Sep. 15, 1975, abandoned, which is a division of Ser. No. 313,706, Dec. 11, 1972, abandoned. This application Mar. 24, 1980, Ser. No. 133,379

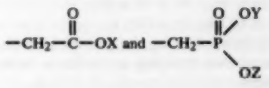
Int. Cl.[3] A01N *57/00*

U.S. Cl. 71—86 11 Claims

1. A method of increasing the sucrose content of sugarcane which comprises applying to the sugarcane plants, from about 2 to about 10 weeks prior to harvest, an effective amount of a compound of the formula



wherein X, Y and Z are each independently selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, alkali metal, ammonium and alkyl ammonium in which the alkyl groups contain from 1 to 4 carbon atoms, and R is selected from the group consisting of alkyl of 1 to 12 carbon atoms, phenylalkyl and chlorinated phenylalkyl of 7 to 8 carbon atoms, phenoxyalkyl of 7 or 8 carbon atoms,



4,435,205

HERBICIDAL O-ALKYLSULFONYLOXY- AND O-ALKYLSULFONYLAMINOBENZENESULFONAMIDES

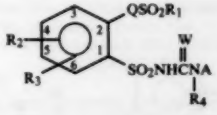
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 262,813, May 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 168,344, Jul. 11, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,809

Int. Cl.[3] A01N *9/22;* C07D *239/42*

U.S. Cl. 71—92 32 Claims

1. A compound of the formula:

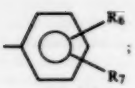


where

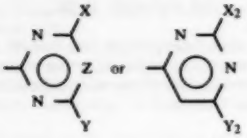
W is O or S;

Q is O or NR_5;

R_1 is C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$ or



R_2 is H, F, Cl, Br, OCH_3, NO_2, CF_3 or C_1–C_2 alkyl;
R_3 is H, F, Cl, Br or CH_3;
R_4 is H, CH_3 or OCH_3;
R_5 is C_1–C_4 alkyl;
R_6 and R_7 are independently H, F, Cl, Br, CH_3, CF_3, NO_2 or OCH_3;
A is

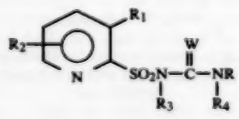


X is NH_2, $N(CH_3)_2$, $NHCH_3$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br, CH_2OCH_3, $CH_2OCH_2CH_3$, C_1–C_4 alkoxy, C_1–C_2 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$ or C_2–C_4 alkoxy substituted with 1–3 atoms of F, Cl or Br;
Y is H, CH_3, OCH_3 or Cl;
X_2 and Y_2 are independently CH_3 or OCH_3; and
Z is CH, CCH_3, CBr, CCl, CF, CI, CC_2H_5, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;
provided that
(1) when Y is Cl, then X is NH_2, $NHCH_3$, $N(CH_3)_2$, CH_3 or OCH_3;
(2) when Y is H, then X is OCH_3, CH_3 or CH_2OCH_3,
(3) when W is S, then R_4 is H; and
(4) when R_4 is OCH_3, then Q is O.

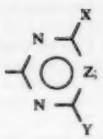
24. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

4,435,206
AGRICULTURAL PYRIDINESULFONAMIDES
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 83,753, Oct. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,258, Dec. 4, 1978, abandoned. This application Jan. 22, 1981, Ser. No. 227,242
Int. Cl.³ A01N *43/54*; **C07D** *239/28, 239/30*
U.S. Cl. 71—92 **31 Claims**

1. A compound of the formula:



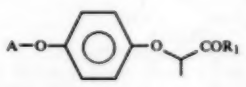
wherein
R is



R_1 is H, Cl, Br, F, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, NO_2, CF_3, $COOR_5$ or $SO_2NR_6R_7$;
R_2 is H, Cl, Br or CH_3;
R_3 and R_4 are independently H or CH_3;
R_5 is C_1–C_6 alkyl, C_3–C_6 alkenyl, $CH_2CH_2OCH_3$, $CH_2CH_2OCH_2CH_3$, $CH_2CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_6 and R_7 are independently CH_3 or CH_3CH_2;
W is oxygen or sulfur;
X is CH_3, $—OCH_3$ or $—OCH_2CH_3$;
Y is H, Cl, CH_3, CF_3, $—NHCH_3$, $—N(CH_3)_2—$, $—CH_2OR_8$, $—CH_2CH_2OR_8$, $—OCH_2CF_3$ or VR_9;
Z is CH;
V is oxygen or sulfur;
R_8 is CH_3 or CH_3CH_2;
R_9 is CH_3, $CH_3CH_2—$, $CH_2CO_2R_8$, $—CH_2CH_2OR_8$, $C(CH_3)HCO_2R_8$ or $CH_2CH_2CO_2R_8$;
and agricultural salts thereof.

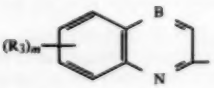
4,435,207
QUINYLOXY-PHENYLOXY-OXIME ESTER COMPOUNDS HAVING HERBICIDAL ACTIVITY
Georg Frater, Greifensee; Milos Suchy, Pfaffhausen; Jean Wenger, Uster, and Paul Winternitz, Greifensee, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Nov. 23, 1981, Ser. No. 323,784
Claims priority, application Switzerland, Nov. 26, 1980, 8750/80; Oct. 1, 1981, 6328/81
Int. Cl.³ A01N *43/40*; **C07D** *215/22*
U.S. Cl. 71—94 **20 Claims**

1. An oxime ester of the formula



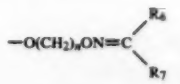
I

wherein A is



Ib

in which R_3 is hydrogen, halogen or trifluoromethyl, m is 1 or 2, B is —CH═, and wherein R_1 is a group of the formula



Id

wherein R_6 and R_7 are lower alkyl, cycloalkyl with 3 to 6 carbon atoms, lower alkylcarbonyloxy-lower alkyl, lower alkoxy or lower alkylthio or R_6 and R_7 together with the carbon atom to which they are attached are a cycloalkyl group with 3 to 7 carbon atoms, and wherein n is 1 or 2, and wherein R_6 can also be hydrogen.

4,435,208

HERBICIDALLY ACTIVE SUBSTITUTED PHENOXYCINNAMIC ACID DERIVATIVES

Heinz Förster, Wuppertal; Ludwig Eue, Leverkusen, and Robert Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

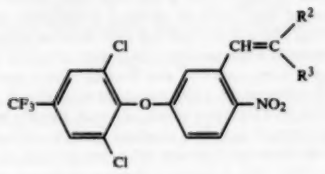
Filed Nov. 6, 1981, Ser. No. 318,899

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044810

Int. Cl.³ A01N *37/34, 37/10;* C07C *69/618, 121/75*

U.S. Cl. 71—105 8 Claims

1. A substituted phenoxycinnamic acid derivative of the formula



in which

R^2 represents a hydrogen atom, a cyano, C_1 to C_4 alkyl, acetyl or C_1 to C_4 alkoxycarbonyl radical and R^3 represents a cyano or (C_1 to C_4 alkoxy)-carbonyl radical or a radical of the general formula —COOM

wherein

M represents a hydrogen, sodium or potassium cation or one equivalent of a magnesium or calcium cation.

7. A method of combating weeds comprising applying to the weeds, or to a habitat thereof, a herbicidally effective amount of a compound according to claim 1.

4,435,209

PROCESS FOR THE PREPARATION OF SILICON OR FERROSILICON

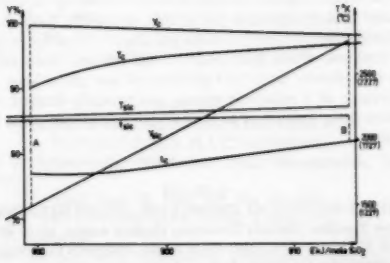
Thomas Johansson, Ljungaverk, Sweden, assignor to Kemanord AB, Stockholm, Sweden

Continuation of Ser. No. 195,498, Oct. 9, 1980, abandoned. This application Mar. 31, 1982, Ser. No. 363,812

Claims priority, application Sweden, Oct. 24, 1979, 7908821

Int. Cl.³ C21C *5/52;* C01B *33/02*

U.S. Cl. 75—11 9 Claims



1. A process for the preparation of silicon or ferrosilicon by reduction of silicon oxide in the form of silicas or cation containing silicates and oxides, optionally in the presence of iron or iron oxide, using a carbonaceous reducing agent in a reaction zone which reaction zone comprises

an energy supply zone and,

a subsequent reaction zone,

whereby

at least heat energy and condensed phases from the subsequent reaction zone are brought to the reentry supply zone,

while elementary silicon and a gas phase are leaving the energy supply zone, and

whereby

at least the carbonaceous reducing agent and the gas phase leaving the energy supply zone are brought to the zone of subsequent reaction,

while a gas leaves the zone of subsequent reaction, and

condensed phases enter the energy supply zone,

whereby

at least 33% of the silicon oxide material is fed directly into the energy supply zone,

so that the supply rate of the silicon oxide to the energy supply zone can be controlled independent of the charging of energy to the energy supply zone,

so that the temperature in the energy supply zone can be influenced, and

regulating the supply rates of silicon oxide and energy to give a low content of silicon monoxide in the gas leaving the zone of subsequent reaction,

the improvement comprising

(a) awaiting and securing a carbon reduction mode in the reaction zone

to obtain a greater difference in temperature between the gases leaving the zone of subsequent reaction and the silicon product than at carbide reduction,

by filling reducing agent in the energy supply zone before start up and directly applying an energy to silicon oxide charging ratio within the interval stated in (b), or

by altering a carbide reduction mode into a carbon reduction mode by use of an energy to silicon oxide charging ratio above the interval stated in (b), and

(b) after securing carbon reduction according to step (a)

supplying the energy and the silicon oxide in a ratio within an interval,

the lower limit of said interval being defined by the lowest value permitting a constant carbon reduction, and

the upper limit of said interval being defined by the highest value permitting a constant carbide reduction,

whereby the gas leaving the zone of subsequent reaction has a silicon monoxide content below 1.5 mole percent.

4,435,210

REFINING AGENT OF MOLTEN METAL AND METHODS FOR PRODUCING THE SAME

Norio Hirokawa; Tsuneo Kawachi, both of Chichibu; Hiroshi Saito, Abiko, and Ryoichi Yoshimura, Koganei, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1983, Ser. No. 466,188

Claims priority, application Japan, Feb. 12, 1982, 57-19696; Feb. 12, 1982, 57-19697; May 14, 1982, 57-80089

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—53 22 Claims

1. A refining agent for metal, consisting essentially of:

(1) a Ca alloy consisting essentially of Ca and at least one element selected from the group consisting of Al and Si, and

(2) a flux mainly comprising CaO and Al_2O_3,

wherein the Ca-alloy and the flux are integrally bonded to one another.

4,435,211

PROCESS OF BLOWING HIGH-OXYGEN GASES INTO A MOLTEN BATH WHICH CONTAINS NON-FERROUS METALS

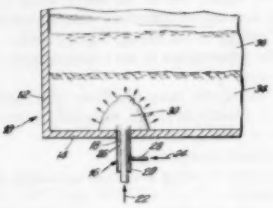
Werner Schwartz, Buchholz, and Peter Fischer, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,297

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045992

Int. Cl.³ C22B *13/00*

U.S. Cl. 75—62 18 Claims



1. In a process of blowing high-oxygen gases into a reactor comprising a reactor wall and containing within said wall a molten bath which contains non-ferrous metals, said blowing through double-tube nozzles, each of said nozzles terminating in a tip, said nozzles extend through the reactor wall into the molten bath, wherein a protective cooling fluid consisting essentially of a gas or liquid is injected through one tube of each double-tube nozzle, the improvement which comprises employing a flow rate of the protective fluid relative to the composition of the slag and the difference between the temperature of the slag and its solidification point, such that a gas permeable conical porous crust forms over the tip of the nozzles and regulating such flow rate so that the size of the crust does not exceed a predetermined size.

4,435,212

HIGH PERMEABILITY ALLOY

Norio Ueshima, Yokohama; Nobuo Okawa, Tokyo, and Kiyoshi Takayanagi, Kawasaki, all of Japan, assignors to The Furukawa Electric Company Ltd., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 446,974

Claims priority, application Japan, Apr. 15, 1982, 57-62983; Jul. 30, 1982, 57-132002; Aug. 3, 1982, 57-135566; Aug. 12, 1982, 57-140352; Aug. 23, 1982, 57-146022

Int. Cl.³ F16H *29/10*

U.S. Cl. 75—124 10 Claims

1. A high permeability alloy having an excellent wear resistance, consisting essentially of 3 to 10 wt% Al, 4 to 11 wt% si, 2.1 to 20.0 wt% Ru and the balance Fe.

6. A magnetic head of a high permeability alloy having excellent wear resistance, which consists essentially of 3 to 10 wt% Al, 4 to 11 wt% Si, 2.1 to 20.0 wt% Ru, and the balance Fe.

4,435,213

METHOD FOR PRODUCING ALUMINUM POWDER ALLOY PRODUCTS HAVING IMPROVED STRENGTH PROPERTIES

Gregory J. Hildeman, Murrysville; John C. Kuli, Jr., Saxonburg, and Leo A. Vivola, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 13, 1982, Ser. No. 417,796

Int. Cl.³ C21D *1/02*

U.S. Cl. 75—249 43 Claims

1. A method of producing an improved metal article having improved mechanical properties comprising the steps:

(a) providing metal alloy particulate, said alloy being selected to provide strength enhancing dispersed particles capable of degradation at elevated temperatures; and

(b) heating said metal to elevated temperature at a rapid heat-up rate and compacting said metal at elevated temperature to a substantially full density compact, said heat-up rate being such that said heating of said metal to elevated temperature is effected in not more than 0.2 hour for each inch of thickness of said compact, thereby improving said compact such that products made therefrom exhibit an improvement of at least 5% in one or more mechanical properties over a product likewise produced except for said heating occurring over a substantially longer time.

4,435,214

CONDUCTIVE COMPOSITIONS

John E. Ehrreich, Wayland, Mass., assignor to Ercon, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 308,242, Oct. 2, 1981, Pat. No. 4,407,674, which is a division of Ser. No. 126,681, Mar. 3, 1981, Pat. No. 4,319,920. This application Jun. 6, 1983, Ser. No. 501,602

Int. Cl.³ B22F *1/00, 1/02*

U.S. Cl. 75—251 12 Claims

1. A metal powder product formed of (A) up to 50% by volume of a precipitated non-planar, essentially flake-shaped particles wherein silver particles are characterized by an average thickness of less than about 0.2 microns and characterized by a bulk density up to 0.85 gram per cc and (B) at least 50% by volume of a relatively-planar, mechanically-formed, conductive flake powder of at least about 1 gram per cc in bulk density.

4,435,215

HEAT-RESISTANT INORGANIC COMPOSITIONS

Shigeo Yoshino; Tadashi Zenbutsu; Hajime Asami, all of Bizen, and Michiyuki Irie, Oku, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,555

Claims priority, application Japan, Jun. 17, 1981, 56-92384

Int. Cl.³ C04B *19/04*

U.S. Cl. 106—84 6 Claims

1. A heat-resistant inorganic composition which consists essentially of a metal powder, a powder of an inorganic compound having cation-exchangeability and layered structure and a binder of an alkali metal silicate or an alkali metal aluminate, the largest particle diameter of the inorganic compound

having a layered structure is smaller than the average particle diameter of the metal powder,

wherein the weight ratio of the metal powder to the inorganic compound having a layered structure is in the range from 10:90 to 90:10, and substantially all the inorganic compound having a layered structure has a particle diameter not exceeding 30 μm.

4,435,216

PROCESS FOR THE ACCELERATED SOLIDIFICATION OF HYDRAULIC CEMENT MIXTURE

Manfred Diehl, Frankfurt, and Roland Bergmann, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,524

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132928

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—97 **14 Claims**

1. A hydraulic cement mixture having an accelerated solidification time containing 0.2 to 10 weight % of powdery, crystalline zeolite based on the entire mixture, the zeolite being Type A, zeolite Type X or zeolite Type P.

4,435,217

CONCENTRATED HYDROPHILIC POLYMER SUSPENSIONS

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Apr. 22, 1982, Ser. No. 370,865

Int. Cl.³ C08L *1/08, 1/96*

U.S. Cl. 106—171 **12 Claims**

1. A liquid polymer composition consisting essentially of from about 40% to about 55% of a liquid hydrocarbon, from about 35% to about 55% of a hydrophilic, water soluble polymer, from about 2.0% to about 4.5% of an organophilic clay, from about 0% to about 2% of a dispersant for said organophilic clay, from about 0.5% to about 2.5% of a non-ionic surfactant selected from the group consisting of octyl phenol reacted with from 0 to about 9 moles per mole of ethylene oxide, nonyl phenol reacted with from 0 to about 15 moles per mole of ethylene oxide, dodecyl phenol reacted with from 0 to about 15 moles per mole of ethylene oxide, C_{16}–C_{18} fatty acids reacted with about 3 to about 15 moles per mole of ethylene oxide, C_6–C_{18} aliphatic alcohols reacted with 2 to about 8 moles per mole of ethylene oxide, 2, 4, 7, 9-tetramethyl-4, 7-dihydroxy-5-decyne reacted with from 0 to about 12 moles of ethylene oxide, and mixtures thereof, and from about 1.25% to about 5.0%, based on the weight of said polymer, of a liquid fatty acid, wherein said liquid fatty acid and said surfactant synergistically interact to decrease the viscosity and increase the thermal aging stability of said composition.

4,435,218

VISCOSITY INCREASING ADDITIVE FOR NON-AQUEOUS FLUID SYSTEMS

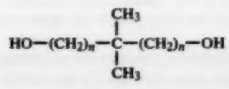
Louis J. Jubanowsky, 310 Indian Trail, Mountainside, N.J. 07092

Filed Nov. 15, 1982, Ser. No. 441,428

Int. Cl.³ C08L *91/00, 91/06*; C08K *5/17*

U.S. Cl. 106—266 **10 Claims**

1. A self-activating organoclay rheological composition useful as an additive for non-aqueous fluid systems, comprising a mixture of an organo modified clay and an alcohol having the formula



wherein n is a whole integer from 1 to 5.

4,435,219

STABLE INORGANIC COATING COMPOSITION FOR ADHERENT, INORGANIC COATINGS

Paul P. Greigger, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 2, 1982, Ser. No. 384,368

Int. Cl.³ C09K *3/00*; C08G *77/06*

U.S. Cl. 106—287.16 **12 Claims**

1. A composition comprising:

I. a vehicle comprising,

A. a dispersion of colloidal silica,

B. a hydrolyzable alkoxysilane,

C. an alcohol,

D. water, and

E. a soluble acidifying agent in an amount sufficient to provide a pH of said vehicle ranging from about 2.8 to about 6.0 wherein said acidifying agent is a soluble metal acid phosphate, and

II. optionally a pigment.

4,435,220

TRANSPARENT COLORED PIGMENTS

Takaji Watanabe, Ohmiya, and Tamio Noguchi, Atsugi, both of Japan, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 26, 1982, Ser. No. 436,861

Claims priority, application Japan, Oct. 26, 1981, 56-170148

Int. Cl.³ C04B *31/00*; C09C *1/00*

U.S. Cl. 106—291 **12 Claims**

1. A transparent, colored pigment comprising a platelet-shaped, transparent substrate, which is coated with a layer of colored metal oxides or metal hydroxides, and which layer contains 0.1–5% by weight of an alkaline earth metal oxide or hydroxide.

4,435,221

PROCESS FOR CLEANING METAL SURFACES OF POLY(ARYLENE SULFIDE) DEPOSITS

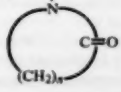
Ronald D. Mathis, and Jerry O. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1982, Ser. No. 403,434

Int. Cl.³ C23G *5/02*

U.S. Cl. 134—2 **10 Claims**

1. A process for the removal of poly(arylene sulfide) deposits from metal surfaces comprising contacting said deposits with a cleaning solution, consisting essentially of at least one alkali metal hydrosulfide in a lactam of the general formula



where R is hydrogen or an alkyl radical having from 1 to 5 carbon atoms and n is an integer from 5 to 7 at a temperature and for a time sufficient to remove said deposits.

4,435,222

PROCESS FOR CLEANING METAL SURFACES OF POLY(ARYLENE SULFIDE) DEPOSITS

Jerry O. Reed, and Timothy W. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1982, Ser. No. 403,435
Int. Cl.³ C23G 5/02
U.S. Cl. 134—2 **21 Claims**

1. A process for removing poly(arylene sulfide) deposits from metal surfaces comprising:

(a) contacting said poly(arylene sulfide) deposits with at least one halogenated aromatic cleaning agent under conditions of temperature and time sufficient to remove said deposits; and

(b) thereafter contacting the remaining deposits with a solution comprising at least one aluminum halide in an aromatic hydrocarbon having from about 6 to about 12 carbon atoms per molecule at a time and for a temperature sufficient to remove said deposits.

4,435,223

NON-FLUORIDE ACID COMPOSITIONS FOR CLEANING ALUMINUM SURFACES

David Y. Dollman, Doylestown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 277,560, Jun. 24, 1981, abandoned. This application May 18, 1982, Ser. No. 378,749
Int. Cl.³ C11D 1/66, 3/04, 7/08; C23G 1/12
U.S. Cl. 134—3 **14 Claims**

1. A process for cleaning an aluminum based surface comprising the steps of

(a) contacting said surface with an aqueous cleaning solution which is free of hydrofluoric acid and other fluorides and which comprises from about 4 to about 24 grams/liter of sulfuric acid, from about 9 to about 22 grams/liter of orthophosphoric acid, and from about 0.1 to about 7.5 grams/liter of a surfactant at a temperature in the range of from about 90° F. to about 140° F. and a treatment time of from about 10 seconds to about 1 minute, and

(b) rinsing the aluminum based surface to remove the cleaning solution therefrom.

4,435,224

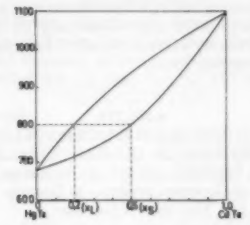
PROCESS FOR PREPARING HOMOGENEOUS LAYERS OF COMPOSITION $HG_{1-x}CD_xTE$

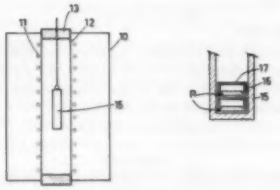
Alain Durand, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Feb. 17, 1981, Ser. No. 234,753
Claims priority, application France, Feb. 22, 1980, 80 04015
Int. Cl.³ H01L 21/205, 21/324
U.S. Cl. 148—1.5 **4 Claims**

1. In a process for preparing a wafer comprising an epitaxial layer of $Hg_{1-x}Cd_xTe$ on a substrate of CdTe by isothermal evaporation-diffusion in vacuo characterized by said epitaxial layer having mediocre internal homogeneity and a gradual compositional transition with the CdTe substrate, the improvement comprising:

depositing a layer of an intermediate composition $Hg_{1-x_0}Cd_{x_0}Te$, wherein $X_o<X$, by epitaxial growth on the CdTe substrate;





melting said layer by subjecting it to heating to a temperature above the liquids point of the layer; and

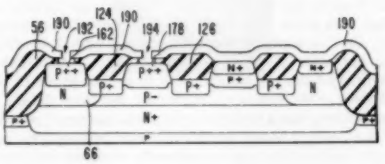
cooling said melted layer rapidly.

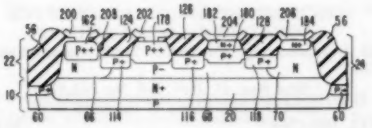
4,435,225

METHOD OF FORMING SELF-ALIGNED LATERAL BIPOLAR TRANSISTOR

Jay A. Shideler, San Mateo, and Robert L. Berry, Cupertino, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed May 11, 1981, Ser. No. 262,568
Int. Cl.³ H01L 29/72, 21/225, 21/22
U.S. Cl. 148—1.5 **20 Claims**





1. A method for manufacturing bipolar a transistor having a base, an emitter, and a collector comprising the steps of:

providing a body of semiconductor material having an impurity region of a first conductivity type therein adjacent to an electrically insulating layer along an upper surface of the body;

forming a protective layer over the insulating layer;

forming an open space through the protective layer above a first region in the body intended for a first doped region of

a second conductivity type opposite to the first conductivity type, at least a portion of the first region being coincident with a portion of the impurity region, the open space defining an edge of the remainder of the protective layer nearest to a second region in the body spaced apart from the first region and intended for a second doped region of the second conductivity type, at least a portion of the second region being coincident with a portion of the impurity region;

introducing a first semiconductor dopant of the second conductivity type through the open space into the body to form the first doped region;

etching the insulating layer through the open space back under the remainder of the protective layer laterally at least toward the second region to define an open space through the insulating layer;

oxidizing adjacent portions, along the insulating layer, of the first doped region and the impurity region outside the first doped region to create an electrically insulating region which includes therein the insulating layer, thereby to leave a remaining impurity region comprising the non-oxidized portion of the impurity region still of the first conductivity type and likewise to leave a remaining first doped region comprising the non-oxidized portion of the first doped region, the insulating region having a minimum thickness at a point above the second region;

removing at least a portion of the remainder of the protective layer above the second region;

forming an open space through the insulating region above the second region; and

introducing a second semiconductor dopant of the second conductivity type through the open space in the insulating region into the body to form the second doped region;

whereby the base comprises the remaining impurity region excluding the second doped region, the emitter comprises one of the second doped region and the remaining first doped region, and the collector comprises the other of the second doped region and the remaining first doped region.

4,435,226

WEAR RESISTANT CAST IRON ALLOY WITH SPHEROIDAL GRAPHITE SEPARATION AND MANUFACTURING METHOD THEREFOR

Hans J. Neuhäuser, Bergish-Gladbach, and Hans-Jürgen Veutgen, Burscheid, both of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Nov. 29, 1982, Ser. No. 444,962

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1981, 3147461

Int. Cl.³ C21D *5/06, 5/14*

U.S. Cl. 148—3 **19 Claims**

1. Wear resistant cast iron alloy of high strength and containing spheroidal graphite precipitates for the manufacture of machine parts subject to wear, comprising a cast iron alloy having the following composition:

1.5 to 3.0% carbon
3.0 to 6.0% silicon
0.1 to 2.0% manganese
0.05 to 0.5% phosphorus
up to 0.15% sulfur
0.1 to 1.0% chromium
0 to 3.5% vanadium
0.1 to 2.5% molybdenum
0.1 to 3.0% total of at least one element from the group nickel and cobalt
0.1 to 3.5% copper
0.1 to 2.5% tungsten
0.1 to 1.0% total of at least one element from the group titanium, niobium and tantalum
up to 0.15% magnesium
up to 0.15% nitrogen,
remainder iron including impurities inherent in the manufacturing process,

said cast iron alloy having a tempered structure in which the graphite is formed by a heat treatment process in which ledeburite decomposes, the graphite being present in an extremely fine form and with a high number of spheroids of about 300,00 to 900,000 per cm^2.

9. Method for producing a cast piece of a cast iron alloy of high strength and containing spheroidal graphite precipitates for the manufacture of machine parts subject to wear, the cast iron alloy having the following composition:

1.5 to 3.0% carbon
3.0 to 6.0% silicon
0.1 to 2.0% manganese
0.05 to 0.5% phosphorus
up to 0.15sulfur
0.1 to 1.0% chromium
0 to 3.5% vanadium
0.1 to 2.5% molybdenum
0.1 to 3.0% total of at least one element from the group nickel and cobalt
0.1 to 3.5% copper
0.1 to 2.5% tungsten
0.1 to 1.0% total of at least one element from the group titanium, niobium and tantalum
up to 0.15% magnesium
up to 0.15% nitrogen,
remainder iron including impurities inherent in the manufacturing process,

said cast iron alloy having a tempered structure in which the graphite is formed by a heat treatment process in which ledeburite decomposes, the graphite being present in an extremely fine form and with a high number of spheroids of about 300,00 to 900,000 per cm^2,

comprising inoculating a cast iron melt with 0.1 to 1.0% ferrosilicon containing 0.5 to 2.0% magnesium, casting the cast iron melt to harden ledeburitically to form a cast piece, and then subjecting the cast piece to a graphitization annealing, subsequently quenching from a temperature above 700° C., and then tempering above 300° C.

4,435,227

METHOD OF TREATING STEEL SURFACES TO PREVENT WEAR, AND COATING OBTAINED THEREBY

Guy R. Nicolas, 22 Clos Nollet, 91200 Athis-Mons, France

Filed Sep. 30, 1982, Ser. No. 428,661

Claims priority, application France, Oct. 6, 1981, 81 18780

Int. Cl.³ C23C *11/04;* C23F *7/24*

U.S. Cl. 148—6.24 **15 Claims**

1. A method for treating steel parts having a carbon content of at least 0.15%, said treatment providing said steel parts with protection against surface wear, comprising:

a three-stage process comprising,

a first stage wherein iron-molybdenum is deposited on the surface of the steel,

a second stage wherein a sulfur containing compound is introduced to the surface of said steel part and thereafter adheres to said surface; and

a third stage wherein said steel part with said sulfur containing compound adhering thereto is subjected to vapor phase chromizing thereby forming an outer surface layer comprising chromium-molybdenum sulfide and an inner layer under lying the outer surface layer comprising chromium carbides $M_{23}C_6$ and M_7C_3.

4,435,228
PROCESS FOR PRODUCING NB_3SN SUPERCONDUCTING WIRES

Kyoji Tachikawa, Tokyo, and Yuji Yoshida, Sakura, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,518
Claims priority, application Japan, Feb. 22, 1982, 57-25981
Int. Cl.³ H01L *39/24*
U.S. Cl. 148—11.5 Q **8 Claims**

1. A process for producing a Nb_3Sn superconducting wire, which comprises preparing a composite from a tin material, a niobium material and a matrix of copper alloy material which is tin-free containing 0.1 to 5 atomic percent in total of at least one element of Group IV of the periodic table selected from the group consisting of titanium, zirconium, and hafnium; processing the composite into a wire, tape or tube; and heat-treating the processed composite at a temperature of 400° to 900° C. to form a Nb_3Sn compound.

4,435,229
METHOD OF PREPARING A TWO-WAY SHAPE MEMORY ALLOY

Alfred D. Johnson, 5383 Bancroft Ave., Oakland, Calif. 94601

Continuation of Ser. No. 78,891, Sep. 25, 1979, abandoned. This application Oct. 2, 1981, Ser. No. 308,127
Int. Cl.³ C22F *1/00, 1/10*
U.S. Cl. 148—11.5 R **28 Claims**

1. A method of training a shape memory alloy so that the alloy has a two-way shape memory when the alloy is operated in a working cycle for converting heat into mechanical work with the conditions of the cycle including an upper operating temperature T of the alloy and a stress σ_w at which the alloy is operated in the working cycle, the method comprising iteratively performing the steps of heating the alloy under a first training stress σ_1 to a temperature T_H which is above said temperature T, cooling the alloy to a temperature T_C which is below the zero-force transition temperature of the alloy, deforming the alloy at T_C while applying to the alloy a second training stress $\sigma_2$where $\sigma_2 \neq \sigma_1$ and $\sigma_2 \geqq \sigma_w$, heating the alloy back to T_H, and changing stress on the alloy to the first training stress.

4,435,230
ALUMINUM ALLOY PRINTING PLATE AND METHOD FOR MANUFACTURING SAME

Chozo Fujikura, Nikko, Japan, assignor to Furukawa Aluminum Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 410,053
Claims priority, application Japan, Sep. 3, 1981, 56-139148
Int. Cl.³ C22C *21/08*
U.S. Cl. 148—11.5 A **3 Claims**

1. An aluminum alloy printing plate comprising a printing plate of an aluminum alloy consisting essentially of 0.05–0.30% Mg, 0.05–0.30% Si, 0.15–0.30% Fe and the remainder Al and ordinary impurities said plate having a uniformed grained surface and a photosensitive layer thereon.

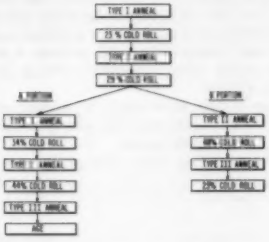
4,435,231
COLD WORKED FERRITIC ALLOYS AND COMPONENTS

Michael K. Korenko, Wexford, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,050
Int. Cl.³ C21D *8/04*
U.S. Cl. 148—12 EA **16 Claims**

1. A process for treating a precipitation hardening ferritic alloy comprising the steps of:

solution treating said alloy;
followed by a final cold working of said alloy;



and then placing said alloy in said alloy intended application, wherein the first significant precipitation hardening of said alloy after said final cold working step is induced.

4,435,232
EXPLOSIVE COMPOSITION

David A. Ciaramitaro, and Jack M. Moore, both of Benson, Ariz., assignors to Apache Powder Company, Benson, Ariz.

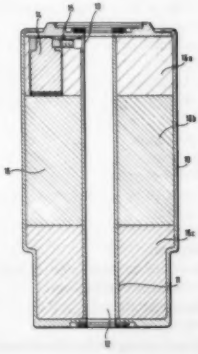
Filed Dec. 10, 1982, Ser. No. 448,874
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **9 Claims**

1. An explosive composition comprising:
a low density carbonaceous absorbent formed at least in part from comminuted, processed cellulose;
a liquid explosive absorbed onto the low-density, carbonaceous absorbent, said carbonaceous absorbent remaining substantially chemically unchanged after absorption of the liquid explosive; and
an oxygen-supplying salt.

4,435,233
PROCESS FOR THE PREPARATION OF A SMOKE COMPOSITION

Peter Rayer, Müllheim; Hartmut Krone, Auggen; Alois Schlessl, Marzoll; Wolfgang Steinicke, Bad Reichenhall, and Wolfgang Trede, Weil am Rhein, all of Fed. Rep. of Germany, assignors to Buck Chemisch-Technische Werke GmbH & Co., Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,839
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1981, 3104464
Int. Cl.³ C06B *33/02*
U.S. Cl. 149—44 **5 Claims**



1. Process for the preparation of a smoke composition, par-

ticularly for extremely heavy-duty projectiles, preferably mortar shells, from a mixture that includes hexachloroethane and metal powder, with the mixture being compressed by high pressure into a self-supporting solid, wherein the improvement comprises the steps of

providing powdered zinc oxide,

highly compressing said powdered zinc oxide,

crushing said high compressed zinc oxide powder to form a granular zinc oxide, and

mixing said granulated zinc oxide with said hexachloroethane and said metal powder to form said mixture.

4,435,234

METHOD OF PRODUCING HIGH PRESSURE DECORATIVE LAMINATES CONTAINING AN AIR-LAID WEB

James E. B. Hunt, Middlesex, England, assignor to Formica Corp., Del.

Division of Ser. No. 233,418, Feb. 11, 1981, Pat. No. 4,379,193. This application Apr. 5, 1982, Ser. No. 365,671

Claims priority, application United Kingdom, Feb. 12, 1980, 8007002

Int. Cl.³ B32B *23/04*

U.S. Cl. 156—62.4 **3 Claims**

1. A method of producing a heat and pressure consolidated, high pressure decorative laminate which comprises,

(1) defibrating cellulosic fibers to produce fibers of an average length of about 0.5 to 2.5 mm in the presence of air to thereby form an air-fiber stream,

(2) incorporating into said air-fiber stream from about 20%–35% of particles of a thermosetting resin to thereby form an air-fiber-resin stream,

(3) depositing the fibers and resin from said air-fiber-resin stream, under conditions of 40–80% relative humidity, onto a foraminous belt at a thickness ranging from about 5–100 mm to form a layer of uniform composition and basis weight,

(4) pre-consolidating the deposited fibers and resin to a thickness of from about 0.5–10.0 mm,

(5) forming a laminate assembly comprising, in superimposed relationship,

(A) a monostichous layer of said preconsolidated fibers and resin and

(B) a thermosetting resin impregnated decorative sheet, and

(6) heat and pressure consolidating said laminate assembly.

4,435,235

GASKET MANUFACTURE

Alan W. Atkinson, Rochdale, and Janet M. Lancaster, Dearnley, both of England, assignors to T&N Materials Research Limited, Manchester, England

Filed Dec. 22, 1981, Ser. No. 321,231

Claims priority, application United Kingdom, Nov. 15, 1980, 8036727

Int. Cl.³ B32B *17/00*; B29C *19/00*; D04H *1/16*; F02F *11/00*

U.S. Cl. 156—62.2 **6 Claims**

1. A method of making a flat gasket directly from expanded graphite particles, the method comprising the steps of:

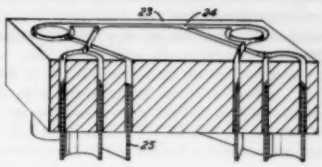
(1) providing co-operating male and female mould members, the female mould member being in the form of a channel extending through a block from one face to a directly opposite face, the channel as seen in plan having a width and configuration corresponding to a desired gasket shape,

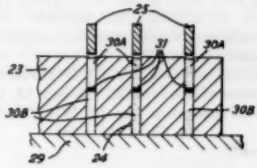
(2) placing a flat, rigid back-up tool in contact with one of said faces,

(3) introducing a charge of graphite particles into said channel,

(4) placing a gasket substrate into said channel,

(5) introducing a second charge of graphite particles into the channel, followed by





(6) applying the male mould member and pressing both charges and the substrate against the back-up tool to form a graphite gasket in situ on both sides of the substrate.

4,435,236

METHOD OF MANUFACTURING A FOLDABLE BICYCLE TIRE HAVING FLEXIBLE BEADS

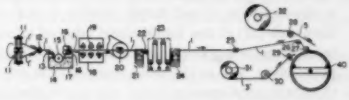
Shoji Inae, and Harunori Okamoto, both of Kagawa, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Division of Ser. No. 269,097, Jun. 2, 1981, Pat. No. 4,378,042. This application Jul. 20, 1982, Ser. No. 400,202

Claims priority, application Japan, Jun. 11, 1980, 55-79390

Int. Cl.³ B29H *17/22, 17/32*; B60C *15/04*

U.S. Cl. 156—132 **9 Claims**



1. A method of manufacturing a tire comprising: the steps of;

twisting two untwisted linear members having a low elongation ratio and high strength supplied from corresponding bobbins at 1 to 2 turns/10 cm to form a cord tensile member,

adhesion treating said cord tensile member;

drying said cord tensile member;

covering said cord tensile member with rubber; accumulating the rubber covered cord tensile member in an accumulator;

winding a bias tire fabric having a predetermined width and length on a former in the outer wall of which bead grooves spaced a predetermined distance from each other are formed;

joining both ends of said bias tire fabric to form an endless tire fabric;

winding said cord tensile member accumulated in said accumulator on said endless tire fabric on a drum of said former along each of said bead grooves to three to five turns;

overlapping start and finish ends of said cord tensile member wound along each bead groove 60 to 150 mm;

bonding together said start and finish ends with bead rubber to form a bead core having a cut elongation of 5% or less and a strength of 300 kg/core;

folding both sides of said endless tire fabric inwardly along said bead cores to form a tire fabric member with beads;

bonding a tread rubber member having predetermined width and length to said tire fabric member with beads to form an unvulcanized tire; and

vulcanizing said unvulcanized tire under predetermined conditions.

4,435,237

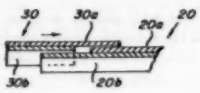
METHOD FOR FORMING MULTI-FLUTE-LAYER CORRUGATED BOARD

Walther J. Hoelzinger, Vienna, Austria, assignor to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 889,387, Mar. 23, 1978, Pat. No. 4,128,677, which is a division of Ser. No. 722,699, Sep. 13, 1976, Pat. No. 4,126,508. This application Aug. 18, 1978, Ser. No. 934,859

Int. Cl.³ B31F *5/00*

U.S. Cl. 156—157 **12 Claims**



1. The method of forming a continuous web having a planar fibrous layer superimposed upon a corrugated layer the flutes of which extend longitudinally of the web, which comprises the steps of

(a) adhesively bonding a continuous planar fibrous facer layer (*22a*) upon a corrugated fibrous layer (*22b*) having parallel flutes, said planar and corrugated layers having the same dimension in the direction of the flutes and being laterally displaced relative to each other a given distance in the direction of said flutes, thereby to define a preliminary web (22) at one longitudinal edge of which the facer layer projects a given distance laterally beyond the corrugated layer, and at the other longitudinal edge of which the corrugated layer projects said given distance laterally beyond the facer layer;

(b) transversely severing said preliminary web in the direction of said flutes to define a plurality of sections (30) of equal length;

(c) arranging said sections in corresponding succession in a common plane with their flutes extending colinearly in longitudinal relation, each section having

(1) at one end a corrugated layer portion extending above, and in flute-enmeshing engagement with the projecting corrugated layer portion of a second section, and a projecting facer layer portion that extends in overlapping relation at least partially above the adjacent portion of the facer layer of said second section; and

(2) at the other end, a projecting corrugated layer portion that extends beneath the projecting facer layer of a third section and at least partially in flute-enmeshing engagement with the adjacent corrugated layer portion of said third section;

(d) adhesively bonding the corrugated and projecting facer layer portions at said one end of the section with the corresponding portions of the second section; and

(e) adhesively bonding the projecting corrugated layer portion of said section with the adjacent portion of said third section, thereby to form a continuous first web (20) the flutes of which extend longitudinally thereof.

4,435,238

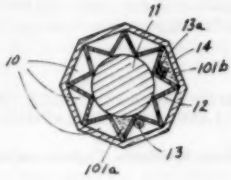
MANUFACTURING PROCESS FOR A LOW LOSS OPTICAL FIBER CABLE

John C. Smith, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,392

Int. Cl.³ B65H *81/02*; G02B *5/14*

U.S. Cl. 156—171 **11 Claims**



1. A method of manufacturing an optical fiber cable unit comprising the steps of:

paying off an axial strength member such that said strength member rotates;

paying off a corrugated tape; applying said tape to said rotating strength member so that said tape is helically wrapped about said strength member and so that the corrugations form helical grooves;

paying off an optical fiber and laying said fiber in a helical groove formed by the corrugations; and

winding the cable on a reel.

4,435,239

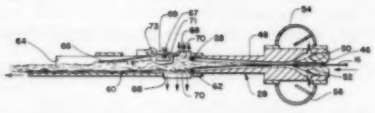
PNEUMATIC TOW BLOOMING PROCESS

James E. Harris, Bristol, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1982, Ser. No. 359,968

Int. Cl.³ D01D *11/02*

U.S. Cl. 156—180 **5 Claims**



1. A process for treatment of tow in preparation for forming tobacco smoke cigarette filter rods comprising the steps of

withdrawing a continuous multifilament crimped tow from a supply source;

banding the crimped tow to a predetermined width wider than the tow at the supply source by removing false twist from the tow, spreading the tow and partially breaking up bundles of crimped filaments;

feeding said banded tow to a first zone and applying tension axially to the filaments across the width of said banded crimped tow to extend the crimp in and to partially deregister the crimped filaments within said tow and to partially bloom the tow;

feeding the partially bloomed banded crimped tow to an enclosed second zone and further spreading the width of the tow within said second zone into a wide flat bundle of filaments by impelling a flat gaseous compressed stream in impingement against opposite sides of and across the width of said bundle of filaments at an angle less than 90° to the longitudinal axis of said bundle sufficient to penetrate the bundle, to encompass the filaments with said gaseous compressed stream and to propel the bundle toward and through a tapering exit of said second zone;

feeding said bundle of filaments into a partially enclosed,

wide rectangular third zone and therein momentarily confining and rapidly decelerating the linear speed of said bundle, applying compression against the mass of said bundle and allowing said bundle to be momentarily stored under conditions of low longitudinal tension, simultaneously allowing the compressed gaseous streams to expand and escape from said third zone at a location prior to the exit for said bundle from said wide rectangular third zone and thereby separate and bloom said filaments and cause said filaments to fill said wide rectangular third zone and to relax and recover a portion of their crimp, thereby forming a flat wide low density bloomed tow;

feeding the bloomed filaments of the wide flat low density tow to a fourth zone and uniformly applying plasticizer at a consistent rate to both sides of and through said tow across the width thereof;

feeding said tow to a fifth zone through and between two rolls to squeeze and to spread the plasticizer more uniformly on said filaments, and then

feeding said tow onward for subsequent processing into filter rods.

4,435,240

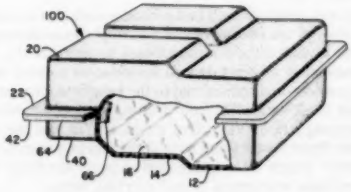
FABRIC-REINFORCED, FLEXIBLE-WALLED CONTAINER AND METHOD OF MAKING SAID CONTAINER

Ernest Knaus; Raymond J. Namsick, and Herbert D. Smith, all of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 194,173, Oct. 6, 1980, Pat. No. 4,360,124. This application Sep. 22, 1982, Ser. No. 421,697

Int. Cl.³ B29C *11/00*

U.S. Cl. 156—242 **7 Claims**



1. A method of making a flexible, fabric-reinforced, complex-shaped container for holding a volume of a volatile liquid hydrocarbon fuel comprising the steps of:

providing a fabric reinforcement material comprised of yarns exhibiting a change-in-effective length characteristic so as to stretch and be shaped to conform to a complex configuration;

coating one face surface of the fabric with an elastomeric gum;

coating the opposite face surface with an elastomeric adhesive gum;

applying an air-impervious nylon plastic film to the adhesive gum to form a complete composite material structure, said film exhibiting a resistance to the deleterious affects of volatile fuels to provide a barrier against penetration of such fuels into the fabric and to aid in vacuum drawing of the composite structure;

placing composite material in a first concave mold forming the upper portion of the complex-shaped container, the elastomeric gum facing inwardly into the mold while the nylon film faces outwardly of the mold;

placing composite material in a second concave mold forming the lower portion of the complex-shaped container, the elastomeric gum facing inwardly into the mold while the nylon film faces outwardly of the mold;

clamping the first and second molds together about peripheral edges to secure the composite material about the peripheral edges in a manner to form an external flange;

applying a differential pressure to the upper and lower molds to draw the composite material into the confines of the respective upper and lower mold cavities to effect shaping of the composite to the mold configurations, said elastomeric gum penetrating the interstices of the fabric to adhere to the adhesive gum on the opposite side of the fabric upon stretching of the fabric; and

curing the composite while holding the differential pressure such that the composite is set and the yarns of the fabric are maintained to the shaped container configuration as established by the molds.

4,435,241

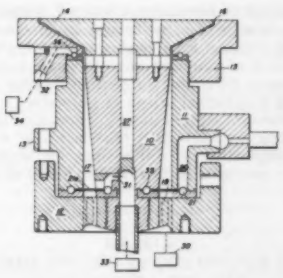
METHOD OF EXTRUDING LAMINATED FILM

Herbert O. Corbett, Bridgeport, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 26, 1967, Ser. No. 654,941

Int. Cl.³ B29C *19/00*

U.S. Cl. 156—244.11 **11 Claims**



1. A method for the extrusion of a composite stream of heat-plastified synthetic resinous material in a sheet-like configuration wherein the composite stream comprises at least three layers of diverse synthetic resinous material, the method comprising:

providing a first stream of heat-plastified synthetic resinous material to a restraining configuration, the restraining configuration having a generally slot-like extrusion orifice,

dividing the first stream of heat-plastified synthetic resinous material into a first substream and a second substream having a generally planar configuration,

providing a second stream of heat-plastified synthetic resinous material, the second stream having a generally planar configuration and a width substantially less than the first and second substreams, positioning the first and second substreams on either side of the second stream, subsequently,

passing the first and second substreams and the second stream through an elongate slot-like extrusion orifice, the second stream being encapsulated within the first and second substreams in the composite stream, the second stream being generally coextensive with the resultant extruded sheet, the improvement which comprises restricting the flow of the first stream generally at the point where it is divided into the first and second substreams and introducing between the first and second substreams the second stream in a generally planar configuration generally parallel to the first and second substreams and having a dimension substantially less in width than the first and second substreams, and passing the first and second substreams and the second stream to the extrusion orifice by means of a tapering configuration which converges toward the orifice.

4,435,242

ELONGATE STRUCTURE

John P. McNulty, Cotham, England, assignor to Bristol Composite Materials Engineering Limited, Bristol, England

Filed Nov. 17, 1982, Ser. No. 442,255

Claims priority, application United Kingdom, Nov. 26, 1981, 8135717

Int. Cl.³ B32B *31/04, 31/30*

U.S. Cl. 156—264 **6 Claims**

1. A method of fabricating a tapered elongate structure comprising the steps of (a) producing a longitudinal member in the form of a tube of even number sided polygonal uniform cross section or of a circular cross-section, or a channel cross section member, (b) cutting the member lengthwise and at an angle to the longitudinal axis so as to produce a plurality of similar segments of tapered shape, (c) arranging the segments in an abutting or overlapping relationship so as to form a tapered configuration and (d) bonding the segments at the abutment or overlap areas to form the tapered elongate structure.

4,435,243

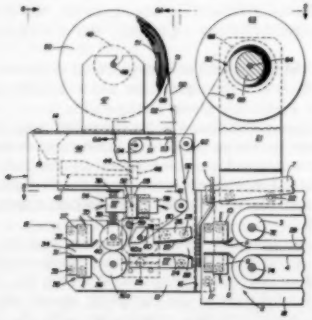
DEPOSIT INFORMATION LABELING MECHANISM FOR ATM ENVELOPE DEPOSITING EQUIPMENT

Syed A. Azeez, North Canton; Paul A. Leipelt, and Herbert Morello, both of Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Sep. 24, 1982, Ser. No. 422,835

Int. Cl.³ B32B *3/00*

U.S. Cl. 156—361 **26 Claims**



1. Mechanism for labeling on a deposit-containing envelope deposit information about a deposit in said envelope, in which said deposit information is derived in part from a customer credit card entered by said customer into and read by a card reader in a credit card activated ATM-type envelope depository which verifies said customer's identity, in which said deposit information also is derived in part from indicia including said customer's personal identification number and the amount of the deposit entered by said customer into the depository keyboard, in which the depository has a control system that translates said entered information and indicia into signals transmitted to and from system computer-based control circuitry, in which said depository has conveyor means having conveyor drive means within a safelike compartment having an exit gate movable between closed and open positions at the discharge end of said conveyor means, and in which first sensor means is located adjacent the conveyor discharge end which senses arrival of the leading end of a deposit envelope being deposited and enables opening of said exit gate and continued conveyor means movement; wherein the improvement comprises depositor mechanism mounted at the discharge end of said conveyor means adjacent said exit gate, including,

(a) conveyor roll means having upper and lower pinch rolls driven by said conveyor drive means and located in said depositor mechanism at a labeling station communicating with said depository conveyor means when said exit gate is opened by said first sensor means upon sensing the arrival at said first sensor means of the leading end of a deposit-containing envelope to be labeled;

(b) delivering said deposit containing envelope by said continued conveyor means movement when said exit gate is open to said driven conveyor roll means at said labeling station to engage the leading end of said deposit-containing envelope with said conveyor roll means to continue envelope movement through said conveyor roll means to adjacent second sensor means;

(c) dot matrix impact printer mechanism mounted at a printing station location adjacent said labeling station;

(d) pressure-sensitive-label carrying strip means movable in a path of travel from a pay-out spool through said printing and labeling stations to a take-up spool;

(e) peeler means engaging said carrying strip at said labeling station;

(f) said carrying strip normally being at rest with a label thereon in printing receiving position at said printing station; and

(g) means enabled when said second sensor means senses the arrival of the leading end of said deposit-containing envelope at said second sensor means to energize the printer mechanism to print deposit information entered into the depository and transmitted to the printer mechanism, onto said label located at said printing station, to move said carrying strip in its path of travel, and to peel the printed label from the carrying strip at the labeling station by said peeler means onto its related deposit envelope during continued movement of said carrying strip.

4,435,244

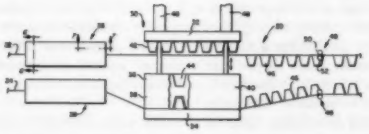
RECIPROCATING CLAMP APPARATUS FOR THERMOFORMING PLASTIC CONTAINERS

Martin H. Beck, Brookline; Suppayan M. Krishnakumar, and Ieuan L. Harry, both of Nashua, all of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 315,842, Oct. 28, 1981, Pat. No. 4,427,476. This application Sep. 30, 1982, Ser. No. 431,446

Int. Cl.³ B29C *17/04*; B32B *1/10*

U.S. Cl. 156—379.8 **15 Claims**



1. Apparatus for forming containers, said apparatus comprising two sets of mold units each including a first platen having a plurality of mold cavities formed therein and a second platen carrying plungers cooperable with said mold cavities to form from sheet material containers within said mold cavity, means mounting a platen of each mold unit set in spaced relation,

means joining together and mounting the others of said platens between said spaced platens for movement between a first position wherein one of said mold unit sets is closed and the other of said mold unit sets is open and a second position wherein said other mold unit set is closed and said one mold unit set is open, and means for sequentially advancing separate and continuous sheet material along two paths relative to a respective mold unit set when that mold unit set is open to displace newly formed containers and to align new sheet portion between platens of the open mold unit set.

4,435,245

APPARATUS FOR IMPRINTING AND DISPENSING PRESSURE-SENSITIVE LABELS ADHERING TO A CARRIER TAPE

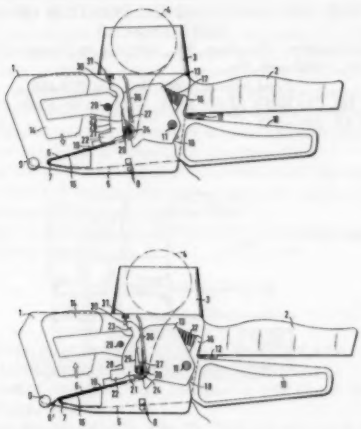
Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Hirschhorn, Fed. Rep. of Germany

Continuation of Ser. No. 254,296, Apr. 15, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,312

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017843

Int. Cl.³ B41F *21/00, 1/08;* **B32B** *31/00*

U.S. Cl. 156—384 **7 Claims**



1. In an apparatus for imprinting and dispensing pressure-sensitive labels adhering to a carrier tape comprising an operating lever which is pivotal from a rest position in which it holds a printing mechanism raised from a platen into an operating position in which it holds the printing mechanism bearing against the platen, a feed means for stepwise drawing of the carrier tape over the platen and a peel edge at which the pressure-sensitive labels detach from the carrier tape and move into a dispensing position, and a braking means for clamping the carrier tape with the pressure-sensitive labels adhering thereto on the path to the peel edge in the rest position of the operating lever, the improvement comprising the braking means including (a) a brake actuating member, (b) a spring which normally biases the brake actuating member into a carrier tape clamping position out of which said member is pivotal into a carrier tape release position, and (c) a cam gearing disposed between the brake actuating member and the operating lever, said cam gearing pivoting the brake actuating member out of the carrier tape clamping position against the bias of said spring into the carrier tape release position in response to the operating lever moving through a part of its travel from the rest position into the operating position, an arresting member which arrests the brake actuating member in the carrier tape release position against the bias of said spring and means for releasing the arresting member when the operating lever reaches its rest position so that the brake actuating member is immediately returned to said tape clamping position by said spring.

4,435,246

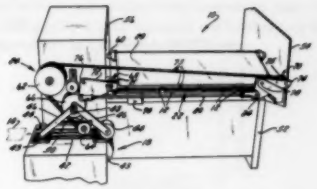
LABEL DISPENSING AND APPLYING APPARATUS

Ronald J. Green, Baraboo, Wis., assignor to Franchise Mailing Systems, Milwaukee, Wis.

Filed Oct. 4, 1982, Ser. No. 432,646

Int. Cl.³ B32B *1/00*

U.S. Cl. 156—542 **16 Claims**



1. An apparatus for simultaneously removing a plurality of pressure-sensitive labels from a backing sheet and applying the labels to parcels moving in sequence on a conveyor,

said apparatus comprising

a label stripping assembly for stripping a substantial portion of the labels from the backing sheet to expose the pressure-sensitive adhesive surface of the labels,

conveyor means for transporting parcels in sequence from a loading station to a dispensing station,

an elastic belt conveyor for transferring labels in sequence from said stripping assembly to said parcels,

means operatively connected to move a portion of said belt conveyor through a cycle of motion which intersects the non-adhesive surface of the label on the initial movement of the conveyor and the pressure-sensitive adhesive surface on the return motion of the conveyor whereby said labels will adhere to the belt conveyor on the return motion.

4,435,247

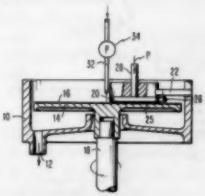
METHOD FOR POLISHING TITANIUM CARBIDE

Jagtar S. Basi, Fishkill, and Eric Mendel, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1983, Ser. No. 473,938

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—636 **9 Claims**



1. A method for the chemical-mechanical polishing of a titanium carbide surface to a high degree of perfection comprising:

maintaining said titanium carbide surface continuously wetted with a water slurry containing a soft abrasive material;

continuously wiping the titanium carbide surface with a firm surface using pressure while maintaining a relative movement between the titanium carbide surface and the firm surface to remove the water reacted titanium carbide

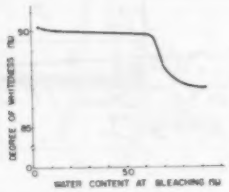
product from the high points of the titanium carbide surface.

4,435,248

PROCESS FOR PRODUCING PHOTOGRAPHIC PAPER

Shun Arakawa, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1980, Ser. No. 212,008
Claims priority, application Japan, Nov. 30, 1979, 54-155115
Int. Cl.³ D21D *3/00*
U.S. Cl. 162—12 **8 Claims**



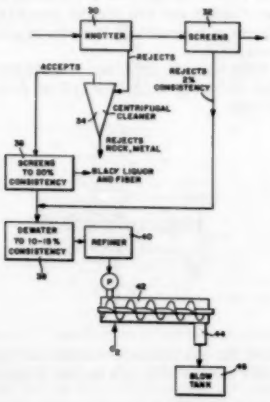
1. A process for producing photographic paper comprising bleaching a paper web containing from 0 to 65% by weight water, using a size press and drying said web at a temperature of from 50° C. to 80° C. for 30 seconds to 3 minutes, wherein the bleaching agent is H_2O_2 used in an amount of from about 0.1% to 5.0% by weight, based on the weight of the pulp forming the paper web.

4,435,249

PROCESS FOR THE OXYGEN DELIGNIFICATION OF PULP MILL REJECTS

Larry D. Markham, Pierrefonds, Canada; Andrew C. Martin, Middletown, Ohio; Edward F. Elton, Bethlehem; Vincent L. Magnotta, Coopersburg, both of Pa., and Scott A. Wallick, Seattle, Wash., assignors to The Black Clawson Co., Middletown, Ohio and Air Products & Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 72,796, Sep. 5, 1979, abandoned. This application Nov. 25, 1981, Ser. No. 325,084
Int. Cl.³ D21B *1/04*; D21C *9/10*; D21D *5/02*
U.S. Cl. 162—24 **9 Claims**



1. A process for the treatment of pulp mill fine screen rejects and knotter rejects to produce a bleachable grade pulp comprising the steps of:

(a) treating a pulp stream from an initial cooking or digestion stage to separate knotter rejects from said pulp,

(b) passing said pulp from step (a) to a fine screen to separate fine screen rejects,

(c) dewatering said knotter rejects to a consistency of about 20% while removing black liquor and free fiber;

(d) mixing fine screen rejects from step (b) having a consistency of from about 0.5–5.0% with said knotter rejects;

(e) dewatering the mixture of knotter and fine screen rejects to a consistency of about 10–15%;

(f) mechanically fiberizing said mixture at the same 10–15% consistency;

(g) delignifying the fiberized mixture with mixing at the same 10–15% consistency in the presence of oxygen and alkaline chemicals for a period of from about 5 to about 120 minutes at 80°–140° C., in a reactor separate from any reactor used to delignify said pulp, and

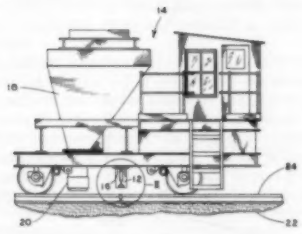
(h) sending said fiberized materials to a bleaching stage.

4,435,250

DEVICE FOR ADJUSTING THE POSITION OF A TRACK MOUNTED CAR

Carl Lindgren, Glenshaw, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 6, 1982, Ser. No. 375,445
Int. Cl.³ B61B *12/00*; B61L *3/02, 27/04*; C10B *45/00*
U.S. Cl. 202—239 **26 Claims**



1. A track mounted car, track and a device for moving the track mounted car from an initial spotted position on said track to a second predetermined position on said track comprising:

(a) an arm member having a terminal feeler means and being pivotally mounted on said car so as to be oscillatory in a vertical arc generally parallel to said track;

(b) sensing means for providing an electrical output signal related in polarity and proportional in amplitude to angular displacements of the arm member in its vertical arc from a gravity based reference position of the arm member in said vertical arc;

(c) a protrusion engageable with said feeler means and positioned remotely from the car and in fixed relation to the track so that when the feeler means and the protrusion are engaged and the car has reached its second predetermined position, the arm member will be positioned in its gravity based reference position;

(d) a dual directional, variable speed drive means for moving the car on the track; and

(e) control means for operating said drive means in a direction dependent on the polarity of said signal and at a speed proportional to the amplitude of said signal, such that the car will move to said second predetermined position at an instantaneous velocity which is approximately proportional to its remaining distance from said second position.

4,435,251

METHOD FOR PURIFICATION OF 2-METHYLENEGLUTARONITRILE

Makoto Takeda; Kazuhito Miyoshi, both of Ami; Mitsumasa Kaitoh, Kashiwa, and Hiroyuki Omori, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,815
Claims priority, application Japan, Dec. 27, 1980, 55-185497
Int. Cl.³ B01D 3/34
U.S. Cl. 203—50 3 Claims

1. In a method for purification of crude 2-methyleneglutaronitrile product containing as impurities a metal halide, a trialkylamine, and a trimer or higher polymer of acrylonitrile, which crude product is a reaction product obtained by dimerizing acrylonitrile in the presence of a catalyst comprising a metal halide and a trialkylamine, wherein the purification comprises treating said crude 2-methyleneglutaronitrile product with an acid and then subjecting the treated product to distillation, the improvement comprising effecting said purification by the following sequential steps:

(1) subjecting said reaction product to predistillation at a temperature of 120° C. or lower under a pressure of 10 to 200 mm Hg to distill off therefrom at least portions of unreacted acrylonitrile and trialkylamine;

(2) treating said crude 2-methyleneglutaronitrile product with an acid selected from the group consisting of hydrochloric acid, sulfuric acid and nitric acid of a concentration of 1 to 30% by weight at a temperature of 10° to 50° C. in the presence of an aromatic hydrocarbon selected from the group consisting of benzene, toluene, ethylbenzene and xylene in a quantity of 0.1 to 2 volumes relative to that of the crude 2-methyleneglutaronitrile;

(3) separating the acid-treated crude product from the aqueous layer, and washing the remaining organic layer with a dilute aqueous alkaline solution; and

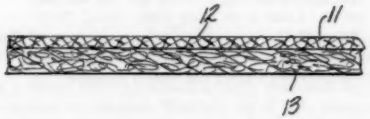
(4) subjecting the washed crude product to distillation under a reduced pressure.

4,435,252

METHOD FOR PRODUCING A RETICULATE ELECTRODE FOR ELECTROLYTIC CELLS

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 143,970, Apr. 25, 1980, Pat. No. 4,370,214. This application Sep. 24, 1982, Ser. No. 422,799
Int. Cl.³ C25B 1/08
U.S. Cl. 204—11 16 Claims



1. A method for producing a reticulate electrode for use in the electrolysis of aqueous solutions of ionizable compounds which comprises:

(a) affixing filaments to a support fabric to form a network of filaments, said filaments being comprised of a metal or metal sensitized plastic,

(b) depositing an electroconductive metal on said filaments to form metal coated filaments, said deposition providing interfilament bonding at contact sites between adjacent filaments, and

(c) removing said support fabrics from said metal coated filament network to produce a reticulate electrode having a porosity of at least 80 percent.

4,435,253

GOLD SULPHITE ELECTROPLATING SOLUTIONS AND METHODS

Kenneth D. Baker, Bridgewater, and Hans Schelder, Bloomfield, both of N.J., assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 28, 1983, Ser. No. 461,341
Int. Cl.³ C25D 3/48, 3/62
U.S. Cl. 204—43 G 19 Claims

1. In an aqueous electrolyte sulphite gold electroplating solution comprising an alkali metal or ammonium gold sulphite, and at least a grain refining amount of thallium metal, the improvement where said solution also contains a non-hydroxy, non-amino carboxylic acid to maintain the hardness of the gold deposited therefrom below about 90 Knoop.

4,435,254

BRIGHT NICKEL ELECTROPLATING

Kenneth W. Lemke, Englishtown, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 88,610, Oct. 26, 1979, abandoned, which is a continuation of Ser. No. 956,741, Nov. 1, 1978, abandoned. This application Jun. 12, 1981, Ser. No. 272,850
Int. Cl.³ C25D 3/14, 3/16, 3/18
U.S. Cl. 204—49 46 Claims

1. An aqueous acidic electroplating solution for use in electrodepositing nickel from a nickel compound containing solution, wherein said solution comprises:

(a) a nickel compound;

(b) 0.005 gram per liter to 0.1 gram per liter of an acetylenic amine or substituted amine, aliphatic or aromatic; and

(c) 0.01 gram per liter to 0.10 gram per liter of a sulfonated acetylenic and salts thereof where the acetylenic bond and the sulfonate radical are connected by a carbon chain where C=1–6.

4,435,255

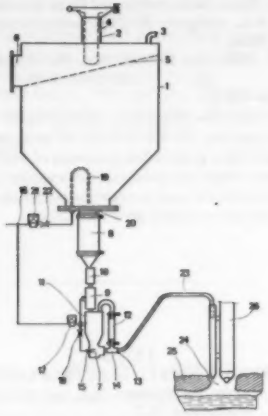
PROCESS AND APPARATUS FOR CONTROLLED FEED OF ALUMINA AND HALOGEN ADDITIVES INTO ELECTROLYSIS VATS FOR THE PRODUCTION OF ALUMINUM

Spyridon Casdas, Paralia Distomon, Greece, assignor to Aluminium de Grece, Athens, Greece

Filed Apr. 9, 1982, Ser. No. 366,990
Claims priority, application France, Apr. 15, 1981, 81 07855; Dec. 8, 1981, 81 23328
Int. Cl.³ C25C 3/06, 3/14, 3/20
U.S. Cl. 204—67 16 Claims

1. Process for feeding alumina and halogen additives into an electrolytic cell for production of aluminum by electrolysis of alumina dissolved in the molten cryolite according to the Hall-Heroult technique, wherein the alumina or halogen additive is in a storage means having a bottom discharge flow orifice, cutoff means for controlling flow from said flow orifice, and a feed regulator for receiving and dispatching successive regulated dose quantities through a system of pipes and into at least one orifice in the crust of solidified electrolyte which covers the cell during normal operation; the process comprising, opening the cutoff means and allowing the alumina or halogen additive to flow into and fill the feed regulator by gravity, closing the cutoff means, and injecting compressed air at the base of the feed regulator through the feed regulator

and into the system of pipes until all alumina or halogen additive contained in the feed regulator has been dispatched,



through said system of pipes, to the orifice in the electrolysis crust.

4,435,256

PROCESS FOR MAKING POTASSIUM FERRATE [FE(VI)] BY THE ELECTROCHEMICAL FORMATION OF SODIUM FERRATE

J. Paul Deininger, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 246,790, Mar. 23, 1981, and a continuation-in-part of Ser. No. 246,794, Mar. 23, 1981. This application Jul. 1, 1983, Ser. No. 510,115

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—86 **28 Claims**

1. A process for preparing potassium ferrate which comprises:

(a) admixing sodium hydroxide containing less than about 0.02% by weight of sodium halide with sufficient sodium halide to increase the sodium halide concentration of the resulting mixture to between about 0.02% and about 4.0% by weight;

(b) carrying out an electrolysis process with an anolyte comprising said resulting mixture and ferric ions whereby sodium ferrate is formed in the anolyte;

(c) reacting said sodium ferrate with a potassium compound capable of reacting with said anolyte to form a potassium ferrate precipitate; and

(d) recovering said potassium ferrate therefrom.

4,435,257

PROCESS FOR THE ELECTROCHEMICAL PRODUCTION OF SODIUM FERRATE [FE(VI)]

J. Paul Deininger, and Ronald L. Dotson, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 246,790, Mar. 23, 1981. This application Jul. 1, 1983, Ser. No. 510,114

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—86 **23 Claims**

1. A process for preparing sodium ferrate which comprises:

(a) admixing sodium hydroxide containing less than about 0.02% by weight of sodium halide with sufficient sodium halide to increase the sodium halide concentration of the resulting mixture to between about 0.02% to about 4.0% by weight;

(b) carrying out an electrolysis process with an anolyte comprising said resulting mixture and ferric ions whereby sodium ferrate is formed in the anolyte; and

(c) recovering said sodium ferrate therefrom.

4,435,258

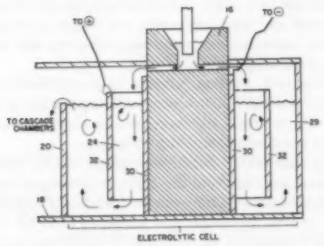
METHOD AND APPARATUS FOR THE RECOVERY OF PALLADIUM FROM SPENT ELECTROLESS CATALYTIC BATHS

James P. Melka, Jr., Henrico County, and John F. Barnes, Glen Allen, both of Va., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,054

Int. Cl.³ C25C *1/20*

U.S. Cl. 204—109 **11 Claims**



1. A method for recovering palladium from a tin-containing acidic colloidal palladium bath comprising the steps of:

(a) dissolving the colloidal palladium by the addition of an oxidizing agent to the bath;

(b) heating the solution containing the dissolved palladium;

(c) placing the solution in an electrolytic cell having a nickel anode and a cathode of nickel or copper; and

(d) electrowinning palladium from the solution at a voltage and current density which tends to preferably plate palladium as opposed to any tin in the solution.

4,435,259

RADIATION CURABLE COMPOSITION OF VINYL POLYSILOXANE AND HYDROGEN POLYSILOXANE WITH PHOTOSENSITIZER

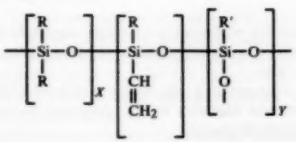
Mike S. H. Chang, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 230,789, Feb. 2, 1981, Pat. No. 4,376,210. This application Sep. 1, 1982, Ser. No. 413,645

Int. Cl.³ C08F *2/50, 2/54;* C08G *77/12, 77/20*

U.S. Cl. 204—159.13 **7 Claims**

1. Radiation curable composition comprising a liquid vinyl polysiloxane polymer having the moiety formula:

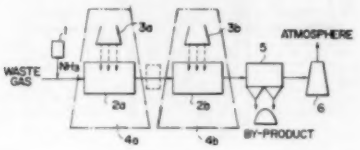


wherein X is a number greater than 1, Y is a number greater than 0 to about 10, R's are the same or different monovalent hydrocarbon radicals selected from the group consisting of C_1 to C_4 alkyl groups, cyclohexyl groups and phenyl groups and R′ is a R group an oxygen radical; a liquid polymethylhydro siloxane and at least one photosensitizer.

4,435,260
METHOD AND APPARATUS FOR DESULFURIZATION AND DENITRIFICATION OF WASTE GAS BY MULTI-STAGE ELECTRON BEAM IRRADIATION

Yamada Koichi, Tokyo; Kawamura Keita, Fujisawa, and Aoki Shinji, Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,511
Claims priority, application Japan, Jun. 16, 1980, 55-81088
Int. Cl.³ C01B *17/60*
U.S. Cl. 204—164 **2 Claims**



1. An improved method of treating waste gas containing sulfur dioxide (SO_2) and nitrogen oxides (NOx) to remove said oxides wherein ammonia is added to the waste gas and the waste gas is irradiated and SO_2 and NOx are then removed from the waste gas, the improvement comprising carrying out said irradiation by multiple steps comprising

(1) the first irradiation step comprising introducing waste gas into the first irradiation unit and irradiating the same gas in an irradiation vessel of said unit with electron beams to give a dose which is determined by the concentrations of NOx and SO_2 of the non-irradiated waste gas to thereby reduce concentrations of NOx and SO_2 to the certain predetermined levels, respectively;

(2) the second irradiation step, the third irradiation step, the fourth irradiation step,—and the n th irradiation step in sequence each comprising substantially the same procedure as that mentioned in the first irradiation step;

(3) the n th irradiation step comprising introducing the irradiated gas discharged from the (n−1) irradiation step into the n th irradiation unit and irradiating the same gas in an irradiation vessel of the n th irradiation unit with electron beams to give a dose which is determined by the concentrations of NOx and/or SO_2 of the waste gas discharged from the (n−1)th irradiation unit to thereby reduce the concentrations of both NOx and SO_2 to the intended final levels, respectively; and

(4) an aerosol collection step comprising introducing the waste gas discharged form the n th irradiation step into an aerosol collector to thereby separate aerosol particles from the waste gas.

4,435,261
POLYMERIZATION REACTION BY CHARGE INJECTION

Donald J. Mintz, Fort Lee; Arnold J. Kelly, Princeton Junction, and Anthony M. Gleason, Westfield, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

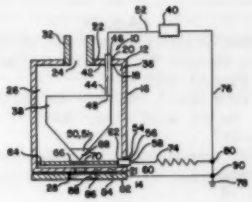
Filed Jul. 27, 1981, Ser. No. 287,411
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ C25B *3/00*
U.S. Cl. 204—168 **6 Claims**

1. A process for the free radical polymerization of liquid monomers into thermoplastic polymers, which comprises:

(a) introducing at least one monomer into a chamber of a cell of an electrostatic atomizing device, said electrostatic having a discharge spray means;

(b) means for injecting an electrical charge through said liquid monomer in said chamber, said electrical charge being sufficient to generate free excess charge in said liquid monomer to initiate polymerization of said monomer into a polymer within said chamber, said means including at least a first electrode and a second electrode disposed in said chamber, said first and second electrodes being in liquid contact with said monomer within said chamber, said first and said second electrodes being of different voltages;

(c) ejecting said charged thermoplastic polymer through said discharge spray means in the form of a stream or charged droplets; and



(d) directing said formed stream or charged droplets towards a third electrode at a different potential and disposed externally to said housing for producing a high electric field in said thermoplastic polymer at said discharge spray means, said field being produced by a voltage differential between said thermoplastic polymer and said external electrode.

4,435,262
ELECTRICALLY NEUTRAL NONPERMSELECTIVE POROUS MEMBRANE

Edward L. Phillips, Medford Lakes, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Division of Ser. No. 299,574, Sep. 4, 1981, Pat. No. 4,397,908, and a continuation-in-part of Ser. No. 99,338, Dec. 3, 1979, abandoned. This application Dec. 27, 1982, Ser. No. 453,225
Int. Cl.³ C25D *13/00*
U.S. Cl. 204—181 C **1 Claim**

1. A method of transporting anions or cations through a membrane barrier which comprises:

(a) providing a painting bath which contains both anions and cations;

(b) placing in said bath at a selected location an electrically neutral nonpermselective porous membrane which compromises a woven fabric substrate having coated thereon a mixture of a binder material and an inert porous filler material, with the porosity of said filler material forming a plurality of random paths which pass through the thickness of said membrane:

(c) providing an electrodepostion system which includes an electrical potential which is imposed within said bath and across said membrane whereby ions of a given polarity are transported through the membrane via said porous paths, while paint which has become electrically charged an opposite polarity is deposited on a workpiece contained within said painting bath.

4,435,263
BACKFILL FOR MAGNESIUM GALVANIC ANODES

Philip Y. Lau, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1982, Ser. No. 353,460
Int. Cl.³ C23F *13/00*; C04B *33/13*
U.S. Cl. 204—197 **17 Claims**

1. A backfill composition for use with underground placement of magnesium galvanic anodes, said composition consisting essentially of

a mixture of calcium sulfite and bentonite, and a positive

amount of up to about 25% of total solids of at least one compound selected from the group consisting of sodium alkylates and sodium dialkyldithiocarbamates in which the alkyl groups contain 1–4 carbons,

wherein said bentonite contains a substantial amount of alkaline earth metal bentonite

and,

wherein the ratio of calcium sulfite/bentonite is in the range of about 0.2 to about 5.

4,435,264
MAGNESIUM ANODE BACKFILLS

Philip Y. Lau, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1982, Ser. No. 353,461

Int. Cl.³ C23F *13/00*; C04B *33/13*

U.S. Cl. 204—197 **16 Claims**

1. A backfill composition for use with underground placement of magnesium galvanic anodes, said composition consisting essentially of

a mixture of calcium sulfite, $B(OH)_3$, and bentonite, wherein said bentonite contains a substantial amount of alkaline earth metal bentonite, wherein the $B(OH)_3$ is present in a positive amount up to about 16% by weight of the solids in the backfill composition, and

wherein the ratio of calcium sulfite/bentonite is in the range of about 0.2 to about 5.

8. A packaged galvanic anode for underground placement for the cathodic protection of ferrous metal structures, said package comprising

a magnesium anode surrounded by a backfill composition which is contained in a water-permeable material, with means for providing electrical wiring between anode and ferrous metal structure,

wherein said backfill composition consisting essentially of a mixture of calcium sulfite, $B(OH)_3$, and bentonite, wherein said bentonite contains a substantial amount of alkaline earth metal bentonite,

wherein the $B(OH)_3$ is present in a positive amount up to about 16% by weight of the solids in the backfill composition, and

wherein the ratio of calcium sulfite/bentonite is in the range of about 0.2 to about 5.

4,435,265
DEVICE FOR ELECTRO-DEPOSITION OF ALUMINUM

Siegfried Birkle, Hochstadt; Johann Gehring, Spardorf, and Klaus Stöger, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

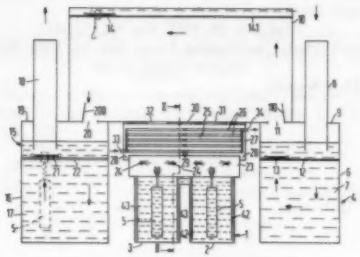
Filed Aug. 11, 1983, Ser. No. 522,019

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231855

Int. Cl.³ C25D *17/06, 17/18, 21/02*

U.S. Cl. 204—198 **6 Claims**

1. In an assembly for the electro-deposit of aluminum onto core goods having a plating tank including at least one open-ended cell containing aprotic, oxygen-free and water-free, organic aluminum electrolyte, a hood means, having inlet and outlet portals, defining an interior space over said at least one cell open end closed to ambient and containing an inert gas, and truck means movable in said interior space for sequentially drawing goods carriers through said inlet portal, passing said goods carriers into and out of said at least one cell, and discharging said goods carriers through said outlet portal, a charging liquid lock means connected to said inlet portal for inputing goods carriers to said plating tank, a discharging liquid lock means connected to said outlet portal for removal of goods carriers from said plating tank, apparatus for preventing smoke formation in said interior space and contamination of said charging and discharging liquid lock means comprising a spray chamber immediately over said at least one cell open end having pipe means for directing liquid sprays at opposed sides of said goods carriers, a condensing chamber immediately over said spray chamber having means for cooling the interior



thereof, and a cover plate defining a slot correspondingly aligned with the open end of said at least one cell for passage of said goods carriers between said interior space of said hood means and said at least one cell.

4,435,266
ELECTROPLATING ARRANGEMENTS

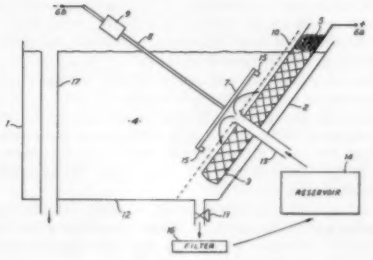
Samuel J. B. Johnston, Ashford, England, assignor to EMI Limited, Hayes, England

Filed Sep. 30, 1982, Ser. No. 428,525

Claims priority, application United Kingdom, Oct. 1, 1981, 8129625

Int. Cl.³ C25D *21/12*

U.S. Cl. 204—276 **12 Claims**

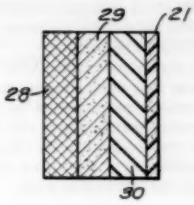


1. An electroplating apparatus, for forming a disc record stamper plate, comprising a bath capable of holding an electrolyte, a filter screen dividing said bath into a cathode region and an anode region, a cathode, at which said stamper plate is formed, in said cathode region, an anode in said anode region, said anode facing and lying substantially parallel to said cathode, said anode comprising anode material in the form of pellets contained in an open mesh container, an electrolyte inlet pipe entering said cathode region through said anode with an open end protruding through said filter screen to face said cathode, and an electrolyte outlet in said anode region, circulating means operative in use of the apparatus to continuously circulate electrolyte through said bath, said circulating means including pump means connected between said outlet and said inlet pipe to create a high pressure region between said filter screen and said cathode thereby continuously flushing the cathode with fresh electrolyte and creating a major return flow path to said outlet directly through said screen and through said anode which substantially purges said anode of contaminating material.

4,435,267
GAS PERCOLATION BARRIER FOR GAS FED ELECTRODE

John S. Batzold, Union, and Judith C. Savas, Clark, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 8, 1982, Ser. No. 433,753
Int. Cl.³ C25B *11/03, 11/04, 13/08;* H01M *4/86*
U.S. Cl. 204—284 5 Claims



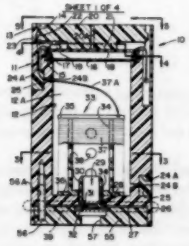
1. A gas fed porous electrode adapted for vertical use in an electrolytic cell of the type wherein a first side of said electrode is positioned to be in contact with aqueous electrolyte and the second and opposite side is positioned to face a source of gas being fed to said electrode, said electrode comprising:

a porous electroconductive body of hydrophobic polymeric material selected from the group consisting of polymers and copolymers and vinylchloride, polyethylene, polybutylene, polypropylene, polytrifluorethylene, and polytetrafluoroethylene, said body including a carbon cloth support for said hydrophobic polymeric material and an electrochemical catalyst, said porous electroconductive body having on the surface in contact with the electrolyte a thin porous hydrophilic layer selected from the group consisting of asbestos, alumina and silica gel, said hydrophilic material being bonded to said hydrophobic polymer with a hydrophobic polymer in an amount sufficient to bond the hydrophilic material while maintaining the hydrophilic nature of such material.

4,435,268
OXYGEN SENSING CELL

Gordon W. Martin, Ronceverte, and John Strohl, Morgantown, both of W. Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 26, 1982, Ser. No. 411,765
Int. Cl.³ G01N *27/50*
U.S. Cl. 204—408 6 Claims

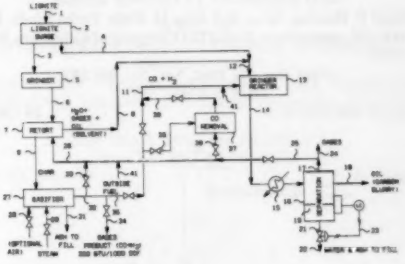


1. An oxygen sensing cell, comprising a body having a pair of end portions provided with respective first and second openings therein, the body further having a central bore forming a main cavity communicating with the openings, an electrolyte within the cavity, a compensation membrane mounted over the first opening in the body, an anode within the cavity in the body, a cathode across the second opening in the body and including an outer permeation sense membrane and an inner porous electrode bonded to the inner surface of said sense membrane, a guard electrode between the second opening and the cathode, said guard electrode being substantially coextensive with and overlying said inner porous electrode, a thin layer of insulating material which is pervious to said electrolyte interposed between said guard electrode and said porous electrode, the opposite sides of said insulating layer being in intimate contact with the adjacent surfaces of said guard electrode and said porous electrode so that said guard electrode is spaced from said porous electrode only by said insulating layer, the guard electrode operating continuously, whereby oxygen molecules dissolved in the electrolyte and diffusing towards the cathode will be scavenged by the guard electrode, thereby substantially increasing the dynamic range of the sensing cell, and means within the body for respectively establishing electrical connections to the anode, cathode and guard electrode.

4,435,269
CONVERSION OF LIGNITE TO HIGHER QUALITY FUELS

Paul L. Gomory, Bethesda, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1982, Ser. No. 373,775
Int. Cl.³ C10G *1/06, 1/00*
U.S. Cl. 208—8 R 15 Claims



1. A process for the beneficiation of a low grade particulate carbonaceous fuel source which comprises:

retorting in a solids/vapor first retort reactor means a first portion of said particulate carbonaceous fuel source under elevated temperatures with a fuel gas comprising hydrogen and CO, thereby producing products comprising a residue char, a first stream of off-gases comprising first gaseous hydrocarbons, and a first oil, and

contacting in a second retort reactor means a second portion of said particulate carbonaceous fuel source with said oil under reaction conditions of elevated temperatures with CO and H_2 effective to convert at least in part said second portion of said particulate carbonaceous fuel source to products comprising further oil, hydrocarbon gases, CO, water, ash, and particulate carbon.

4,435,270
RE-REFINING LUBRICATING OIL IN A BED OF OIL SHALE

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 20, 1983, Ser. No. 515,717
Int. Cl.³ C10B *53/06*
U.S. Cl. 208—11 R 12 Claims

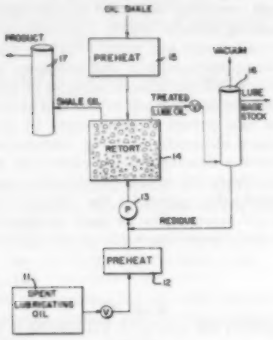
1. A method of reclaiming usable stock from used lubricating oil comprising:

passing said used lubricating oil through a bed of oil shale containing kerogen;

collecting the treated oil passed through said bed; and

heating the oil shale in said bed to convert said kerogens to

shale oil in the presence of hydrogen donor compounds contained in the lubricating oil remaining in said shale and



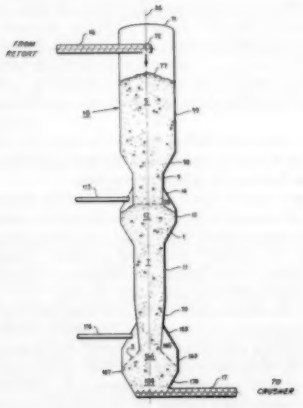
which enhance hydrogen transfer during shale oil production.

4,435,271

OIL SHALE RETORTING PROCESS WITH A MOVING BED PRESSURE LETDOWN STAGE

Roland F. Deering, Brea, and John H. Duir, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Dec. 20, 1982, Ser. No. 451,597
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 R **34 Claims**



1. A process for treating hydrocarbon-bearing particulates recovered from a retort, said process comprising:

(a) passing said particulates from said retort maintained at a higher pressure as a moving solids bed in series flow successively through a surge chamber, a gas injection chamber, a seal leg chamber, and a gas disengaging chamber to a location at a lower pressure than said retort, the configuration of the surge chamber being such that said flow of the solids bed is continuous and the configuration of said seal leg chamber being such as to provide a substantial resistance to gas flow therethrough when said seal leg chamber is traversed by said moving solids bed;

(b) injecting a stream of sealing gas into said moving solids bed in said gas injection chamber, which stream divides, a first portion flowing countercurrently to said moving solids bed through said surge chamber and into said retort at a pressure greater than said retort, and a second portion flowing co-currently with said moving solids bed through said seal leg chamber wherein a substantial pressure drop is incurred and thence into said gas disengaging chamber wherein at least some of said second portion of the sealing gas is separated and withdrawn from the moving solids bed and said solids bed is withdrawn from said gas disengaging chamber at a pressure lower than that of said retort;

(c) crushing particulates withdrawn from step (b) in a crushing zone to a size suitable for combustion under fluidizing conditions in step (e) hereinafter;

(d) transporting crushed particulates from step (c) to a fluidized combustion zone using a carrier gas stream; and

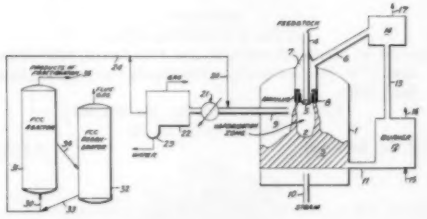
(e) burning a substantial proportion of the combustible materials in the crushed particulates in said fluidized combustion zone, the crushed particulates being maintained in a fluidizing condition by a gas stream comprising oxygen introduced into the combustion zone.

4,435,272

PROCESS FOR UPGRADING CRUDE OIL AND RESIDUAL FRACTIONS THEREOF BY VAPORIZING THE CHARGE IN A FALLING CURTAIN OF CONTACT PARTICLES

David B. Bartholic, Watchung, N.J., and Robert L. Flanders, San Anselmo, Calif., assignors to Engelhard Corporation, Edison, N.J.

Filed Apr. 16, 1982, Ser. No. 369,056
Int. Cl.³ C10G *9/30, 9/42*
U.S. Cl. 208—127 **16 Claims**



1. A process for upgrading a petroleum charge of a crude oil or a residual fraction thereof to provide a product with reduced heavy metal and Conradson Carbon content comprising the steps of:

(a) contacting said charge with a substantially inert heated contact material for a period of time less than three seconds and less than that which induces substantial thermal cracking of said charge by dispersing said charge into a curtain of descending contact material to vaporize the charge;

(b) removing immediately the vaporized hydrocarbon product generated thereby through means on the opposite side of said curtain of contact material from which said charge is dispersed without subjecting said product vapor to additional contact with said inert heated contact material before said removal; and

(c) reducing the temperature of said vapors below that at which substantial thermal cracking of the product occurs.

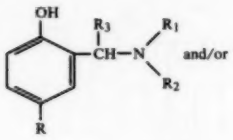
4,435,273
HEAT EXCHANGER ANTIFOULANT

Richard L. Ferm, Lafayette, and Louis R. Kray, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

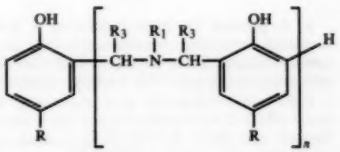
Filed Jul. 23, 1982, Ser. No. 401,438
Int. Cl.³ C10G 9/16
U.S. Cl. 208—48 AA **10 Claims**

1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an antifouling additive is added to said hydrocarbon stream, said additive comprising an alkylamino alkylphenol of the formulae:

(I)



(II)

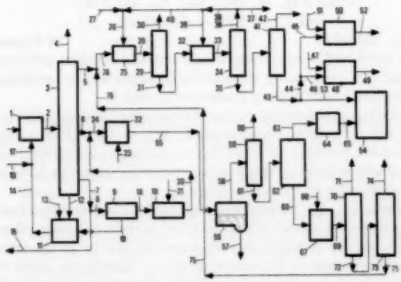


wherein: R and R_1 are independently alkyl groups of 1 to 20 carbon atoms; R_2 is H, or an alkyl group of 1 to 20 carbon atoms; R_3 is H, or an alkyl group of 1 to 6 carbon atoms; and n is 1 to 10.

4,435,274
PROCESS FOR MANUFACTURING GASOLINE WITH UPGRADING OF HYDROCARBON OILS

Bernard Juguin, Rueil-Malmaison; Jean-Pierre Franck, Bougival; Yves Jacquin, Sevres; Christian Marcilly, Houilles, and Germain Martino, Poissy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 28, 1982, Ser. No. 425,348
Claims priority, application France, Sep. 28, 1981, 81 18372
Int. Cl.³ C10G 45/02, 35/04, 65/00
U.S. Cl. 208—80 **9 Claims**



1. A process for manufacturing gasoline from a feed charge selected from residual oils of the steam-cracking and catalytic cracking units, oils obtained by hydroliquefaction of coal and oils recovered from bituminous sands and shales, in which process and the feed charge is fractionated and at least the two following fractions are recovered separately:

a naphtha comprising at least 50% of constituents distilling between 25° and 200° C. and containing at least 40% by weight of naphthenic hydrocarbons and at least 300 ppm of sulfur, 300 ppm of nitrogen and 300 ppm of oxygen, and a middle distillate comprising at least 50% of constituents distilling between about 200° and 360° C., and process being characterized by the steps of:

(a) admixing said naphtha with a gasoline cut "E" defined below, contacting the resultant mixture with a hydrotreatment catalyst, under hydrotreatment conditions, and recovering a hydrotreated naphtha,

(b) contacting the hydrotreated naphtha with a dehydrogenation catalyst under dehydrogenation conditions and fractionating the dehydrogenation product to obtain a gasoline fraction,

(c) contacting said middle distillate with a hydrotreatment catalyst, under hydrotreatment conditions, and fractionating the hydrotreatment product to separately obtain a gasoline fraction and a heavier fraction,

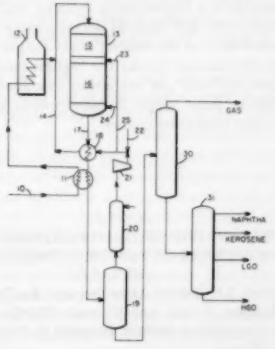
(d) contacting the heavier fraction, obtained in step (c), with a hydrocracking catalyst, under hydrocracking conditions, and fractionating the hydrocracking product to obtain a gasoline cut called "E", and

(e) feeding the gasoline cut "E" to step (a) to be admixed with said naphtha.

4,435,275
HYDROCRACKING PROCESS FOR AROMATICS PRODUCTION

Walter R. Derr, Voorhees, and Michael S. Sarli, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,075
Int. Cl.³ C10G 47/16, 65/02
U.S. Cl. 208—89 **14 Claims**



1. A hydrocracking process of improved distillate selectivity which comprises:

(i) passing a hydrocarbon feedstock comprising a heavy gas oil having an initial boiling point of at least 340° C. containing nitrogenous and sulfurous impurities over a hydrotreating catalyst in the presence of hydrogen at elevated temperature and at a pressure of not more than 7000 kPa to hydrotreat the feedstock,

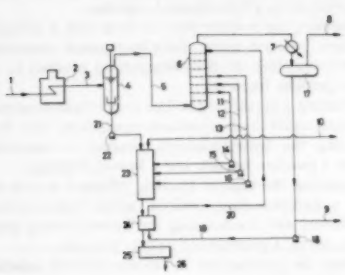
(ii) passing the hydrotreated feedstock without intermediate separation or liquid recycle over a hydrocracking catalyst in the presence of hydrogen at elevated temperature and at a pressure of not more than 7000 kPa to hydrocrack the feedstock at a volume conversion of less than 50 percent to produce a distillate boiling range product.

4,435,276

METHOD OF TREATING HEAVY OIL

Saburo Matsumiya, Chiba; Koichi Washimi, Tokorozawa, and Tsuneo Tanji, Chiba, all of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,394
Claims priority, application Japan, Apr. 9, 1982, 57-57993
Int. Cl.³ C10G 55/04
U.S. Cl. 208—96 10 Claims



1. In a process of treating heavy oil, in which a gas and a volatile oil fraction produced by thermal decomposition of petroleum heavy oil are distilled therefrom, the residue of the thermal decomposition is withdrawn in a liquid state and then is brought into contact with an extraction solvent comprising a part of said volatile oil fraction to extract the component of said thermal decomposition residue that is soluble in said extraction solvent, and then an extraction residue is separated as solid particles from said extraction solvent, the improvement which comprises: fractionating said volatile oil fraction used as said solvent into two or more sub-fractions having different boiling point ranges from each other on condensing the volatile oil fraction in a fractionating column, and contacting said sub-fractions with said thermal decomposition residue in succession according to the boiling point ranges thereof, beginning with the fraction having the highest boiling point range and proceeding with the remaining fractions in descending order of boiling point ranges, to thereby extract the component soluble in said extraction solvent.

4,435,277

PROCESS FOR THE HYDROTREATMENT OF HEAVY HYDROCARBONS IN THE PRESENCE OF REDUCED METALS

Chan T. Dinh, Le Vesinet; Alain Desvard, La Celle Saint Cloud; Yves Jacquin, Sevres, and Germain Martino, Poissy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 15, 1982, Ser. No. 368,531
Claims priority, application France, Apr. 15, 1981, 81 07750
Int. Cl.³ C10G 45/08, 47/02, 47/12
U.S. Cl. 208—108 15 Claims

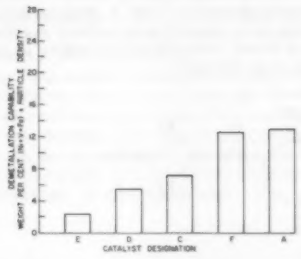
1. A process for hydrotreating a heavy hydrocarbon charge containing sulfur and asphaltenes, in the liquid phase, comprising contacting said charge with hydrogen, at a temperature of 250°–500° C. and a pressure of 20–350 bars, in the presence of a preformed catalyst prepared by reacting at least one transition metal organic compound with at least one organic aluminum compound, in a hydrocarbon solvent which is substantially free of asphaltenes, said transition metal being titanium, zirconium, vanadium, chromium, molybdenum, tungsten, manganese, rhenium, iron, ruthenium, cobalt, nickel, copper, zinc or tin.

4,435,278

HYDROPROCESSING WITH A CATALYST HAVING BIMODAL PORE DISTRIBUTION

Hong C. Chen, Novato, Calif., assignor to Chezon Research Co., San Francisco, Calif.

Filed Jun. 9, 1980, Ser. No. 158,017
Int. Cl.³ C10G 45/06, 47/20
U.S. Cl. 208—251 H 15 Claims



1. A process for hydroprocessing a hydrocarbonaceous feedstock containing constitutents boiling above 350° C. comprising contacting said feedstock with hydrogen under hydroprocessing conditions with a catalyst composition comprising a rigidly interconnected pack containing inorganic matrix oxide which consists essentially of silica, alumina, or mixtures thereof, and about 10–95% fluid catalytic cracking catalyst microspheroids, based upon the total weight of said matrix oxide and said microspheroids, said microspheroids comprising fresh or used fluid catalytic cracking catalyst having a mean diameter within the range of 50–70 microns, said pack characterized by a pore volume of at least 0.15 cc per cc, at least about 30% of said pore volume present as pores having diameters within the range of 50–250 Angstroms and at least about 5% of said pore volume present as pores having diameters greater than 1000 Angstroms, said pack containing 0.5–20 weight percent as metal of a Group VIB metal, metal oxide, or metal sulfide.

4,435,279

METHOD AND APPARATUS FOR CONVERTING OIL FEEDS

Lloyd E. Busch; Charles W. Palmeter; Gerald O. Henderson, and William M. Rice, all of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 19, 1982, Ser. No. 411,719
Int. Cl.³ C10G 11/05, 47/16
U.S. Cl. 208—111 14 Claims

1. A method for upgrading crude oils and residual portions of crude oils comprising carbometallic impurities to produce gasoline and lower boiling components which

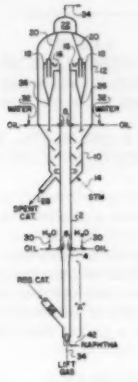
A. passing a suspension of hot regenerated catalyst particles at a temperature in the range of 1300° to 1600° F. in a wet gaseous product of catalytic conversion comprising C_5 and lower boiling components upwardly from the bottom portion of a riser contact zone;

B. contacting the suspension thus formed in a downstream portion of the riser with a residual portion of crude oil to provide the residual oil with a residence time in the riser reaction zone in the range of 0.5 or less up to about 6 seconds and sufficient to obtain vaporous products of catalytic conversion comprising substantial yields of gasoline boiling range components;

C. initially separating said suspension of catalyst particles and vaporous products by imparting a greater momentum to said catalyst particles than said hydrocarbon vapors prior to discharge from the riser open upper end;

D. substantially enhancing the separation of hydrocarbon vapors from catalyst particles of greater momentum dis-

charged from the riser open end by establishing a zone of reduced pressure adjacent the riser open end comprising hydrocarbon vapors separated from catalyst particles by momentum differential; and



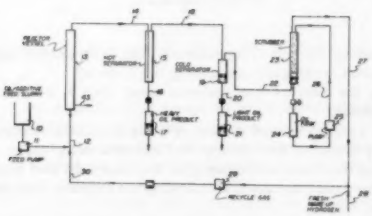
E. withdrawing hydrocarbon vapors from said zone of reduced pressure in the substantial absence of catalyst particle entrainment.

4,435,280

HYDROCRACKING OF HEAVY HYDROCARBON OILS WITH HIGH PITCH CONVERSION

Ramaswami Ranganathan, Regina; David J. Patmore, Ottawa, and Adolfo E. Silva, Calgary, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Ottawa, Canada

Filed Sep. 30, 1982, Ser. No. 429,683
Claims priority, application Canada, Oct. 7, 1981, 387463
Int. Cl.³ C10G *47/02*
U.S. Cl. 208—112 **11 Claims**



1. A process for hydrocracking a heavy hydrocarbon oil containing a substantial portion of pitch which boils above 524° C., which comprises:

(a) passing a slurry feed of said heavy hydrocarbon oil and from about 0.01-60 wt.% of carbonaceous additive particles in the presence of hydrogen upwardly through a confined vertical hydrocracking zone, said hydrocracking zone being maintained at a temperature between about 350° and 500° C., a pressure of at least 3.5 MPa and a space velocity of up to 4 volumes of hydrocarbon oil per hour per volume of hydrocracking zone capacity,

(b) removing from the top of said hydrocracking zone a vaporous effluent comprising hydrogen and vaporous hydrocarbons and being substantially free of pitch and metals, and

(c) removing from the remaining liquid in the hydrocracking zone a drag stream comprising carbonaceous additive, metals and any unconverted pitch, the products coming off at the top of the reactor containing substantially only vaporous hydrocarbons and the drag stream containing substantially all of the liquid material produced during the hydrocracking whereby a pitch conversion of over 90% is achieved.

4,435,281

CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GAS

Iacovos A. Vassalos, Thessaloniki, Greece, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,613
Int. Cl.³ C10G *11/18*; B01J *37/14*
U.S. Cl. 208—113 **20 Claims**

1. A process for the fluidized catalytic cracking of a hydrocarbon feedstock containing organic sulfur compounds which comprises:

(a) cracking said feedstock in a reaction zone through contact with a particulate cracking catalyst;

(b) separating cracking products from cracking catalyst which is deactivated by sulfur-containing coke deposits and passing said deactivated cracking catalyst to a stripping zone;

(c) contacting the deactivated cracking catalyst with an oxygen-containing gas in said stripping zone at a temperature in the range from about 550° to about 700° C. and reacting the oxygen with said sulfur-containing coke deposits to form products which include sulfur-containing gases, wherein the amount of oxygen introduced into said stripping zone is effective to remove at least about 10 weight percent of the sulfur content and less than about 30 weight percent of the carbon content of said sulfur-containing coke deposits, and wherein said weight percent of the sulfur content removed is greater than said weight percent of the carbon content removed;

(d) withdrawing from the stripping zone cracking catalyst which is deactivated by modified coke deposits having a reduced sulfur content and passing said catalyst from the stripping zone to a regeneration zone;

(e) removing said modified coke deposits from the deactivated cracking catalyst in said regeneration zone by burning with an oxygen-containing regeneration gas, thereby regenerating and heating the cracking catalyst;

(f) recycling a stream of hot regenerated cracking catalyst from the regeneration zone to said stripping zone in an amount which is effective to maintain the temperature in said stripping zone within the range from about 550° to about 700° C. and to provide a recycle ratio of hot regenerated cracking catalyst to deactivated cracking catalyst within the range from about 0.05 to about 1.0; and

(g) withdrawing regenerated cracking catalyst from the regeneration zone and passing a stream of said regenerated cracking catalyst to the reaction zone.

4,435,282
CATALYTIC CRACKING USING A CRACKING CATALYST IN ADMIXTURE WITH PARTICLES OF PLATINUM GROUP METAL OR RHENIUM ON A SUBSTRATE REGENERATED TO UP TO ABOUT 0.1% COKE

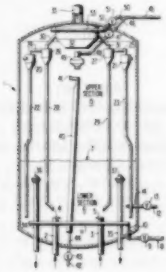
Ralph J. Bertolacini, Lisle Township, DuPage County, Ill., and William L. Forsythe, Jr., Munster, Ind., assignors to Standard Oil Company, (Indiana), Chicago, Ill.

Division of Ser. No. 225,712, Jan. 16, 1981, Pat. No. 4,341,660, which is a division of Ser. No. 158,613, Jun. 11, 1980, Pat. No. 4,341,623, which is a continuation of Ser. No. 963,991, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 664,057, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 447,753, Mar. 4, 1974, abandoned. This application Apr. 19, 1982, Ser. No. 369,500

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.[3] **C10G** *11/18, 11/05;* **B01J** *23/96, 29/38*

U.S. Cl. 208—113 **7 Claims**



1. A process for the fluidized catalytic cracking of higher molecular weight hydrocarbon to produce gasoline or distillate fuel range hydrocarbon comprising:

(a) contacting in a cracking zone said higher molecular weight hydrocarbon with a cracking catalyst which becomes deactivated with coke deposits while being employed in said cracking, and thereby producing gasoline or distillate fuel range hydrocarbon;

(b) withdrawing coked cracking catalyst particles from said cracking zone, said catalyst particles being in admixture with particles containing platinum group metal or rhenium oxidation promoter supported on a substrate;

(c) contacting said mixed particles in a regeneration zone with an oxygen-containing regeneration gas stream in excess of that required for substantially complete combustion of carbon monoxide formed and substantially complete burning of coke from said particles to provide effluent gas containing up to about 1 volume % carbon monoxide and regenerated catalyst particles having up to about 0.1% coke, the amount of said oxidation promoter being effective to enhance the oxidation of carbon monoxide at regeneration temperature, said amount being up to about 10 ppm based on said cracking catalyst, and the amount of said admixture of particles being sufficient to absorb the major amount of the heat from the combustion of said carbon monoxide and burning of said coke;

(d) withdrawing from said regeneration zone oxidation promoter-containing particles admixed with cracking catalyst particles; and

(e) returning said mixture to said cracking zone wherein cracking catalyst and said platinum group metal or rhenium oxidation promoter are contacted with said higher molecular weight hydrocarbon and said cracking is thereby obtained.

2. The process of claim **1** wherein the substrate for said oxidation promoter is selected from the group consisting of silica, alumina and silica-alumina.

6. The process of claim **1** wherein the substrate for said oxidation promoter is selected from the group consisting of silica and alumina.

4,435,283
METHOD OF DEHYDROCYCLIZING ALKANES

Waldeen C. Buss, Kensington, and Thomas R. Hughes, Orinda, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 1, 1982, Ser. No. 344,572

Int. Cl.[3] **C07C** *2/52;* **C10G** *35/06*

U.S. Cl. 208—138 **27 Claims**

1. A method of reforming hydrocarbons comprising contacting said hydrocarbons with a catalyst comprising a large-pore zeolite containing:

(a) at least one Group VIII metal; and

(b) an alkaline earth metal selected from the group consisting of barium, strontium and calcium, wherein the process conditions are adjusted so that the selectivity for n-hexane dehydrocyclization is greater than 60%.

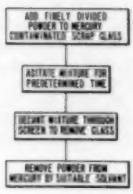
4,435,284
RECOVERY OF MERCURY FROM SCRAP GLASS

Herman R. Heytmeijer, Hanover, N.J., assignor to North American Philips Electric Corp., New York, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,478

Int. Cl.[3] **B03B** *1/00*

U.S. Cl. 209—3 **8 Claims**


ADD FINELY DIVIDED POWDER TO MERCURY CONTAMINATED SCRAP GLASS
AGITATE MIXTURE FOR PREDETERMINED TIME
DECANT MIXTURE THROUGH SCREEN TO REMOVE GLASS
REMOVE POWDER FROM MERCURY BY SUITABLE SOLVENT

1. A method for removing mercury from lamp exhaust tubing or similar scrap glass comprising the steps of:

placing the mercury contaminated scrap glass in a suitable container;

adding a predetermined amount of finely divided sub-micron size powder to the mercury contaminated scrap glass;

agitating the mixture of scrap glass and finely divided powder for a predetermined time to strip the mercury from the glass;

decanting the mixture through a screen of suitable mesh to remove the separated mercury from the glass; and

rinsing the mercury with a suitable solvent to remove the powder from the mercury.

4,435,285
SORTING APPARATUS

Isao Okouchi; Sankichi Takahashi; Yasuteru Mukai; Katsumoto Otake; Takuya Sasaki, all of Hitachi, and Masahiko Miyai, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 278,994

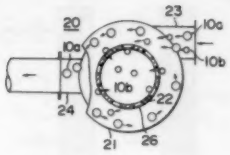
Claims priority, application Japan, Jun. 30, 1980, 55-89717

Int. Cl.[3] **B03B** *7/00;* **B07B** *1/06;* **F28G** *1/00*

U.S. Cl. 209—250 **13 Claims**

1. A sorting apparatus for sorting bodies suspended in a liquid according to the size of said bodies, the apparatus comprising: a casing having a circular cross-section and provided with and inlet pipe through which said bodies are introduced together with said liquid; a separation sleeve disposed at a

center of said casing and cooperating with an inner peripheral surface of said casing and defining therebetween a swirling passage for imparting a swirl to said liquid, said separation sleeve having a peripheral wall in which are formed a plurality of apertures sized and shaped to permit only the bodies smaller



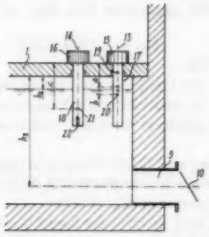
than a predetermined size to pass therethrough, a discharge pipe connected to said casing and adapted for discharging the bodies of small sizes which have passed through said apertures into said separation sleeve, and an outlet pipe also connected to said casing and adapted for taking out the bodies greater than said predetermined size.

4,435,286

LIQUID FILTER DEVICE

Robert Louboutin, Crespieres, and Michel Riotte, Garches, both of France, assignors to Degremont, Malmaison, France

Filed Jun. 21, 1982, Ser. No. 390,623
Claims priority, application France, Jun. 25, 1981, 81 12462
Int. Cl.³ B01D *23/20*
U.S. Cl. 210—116 **8 Claims**



1. A liquid filter device for use in nitrification of the liquid, said device comprising:

an upwardly open structure having a bottom and a floor positioned above said bottom, said bottom and said floor defining a chamber;

a filter element comprising granular material supported by said floor within said structure, liquid to be treated passing downwardly through said granular material in contact with a gas passing upwardly through said granular material during normal operation, and water and gas passing upwardly through said granular material during a washing operation thereof;

a plurality of nozzles opening into said granular material and having stems extending into said chamber;

said plurality of nozzles including first nozzles having opening means for, during said normal operation, passing said liquid from said granular material into said chamber, and for, during said washing operation, distributing said water and gas from said chamber into said granular material, said opening means of each said first nozzle comprising an upper orifice and a lower slit; and

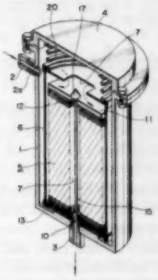
said plurality of nozzles further including second nozzles having opening means for, during said normal operation, distributing said gas from said chamber into said granular material, and for, during said washing operation, distributing said water and gas from said chamber into said granular material, said opening means of each said second nozzle comprising an upper orifice and lower orifice means positioned at a level above the level of said upper orifice of said first nozzle.

4,435,287

APPARATUS FOR FILTRATION OF LUBRICATING OIL FOR AN INTERNAL COMBUSTION ENGINE

Morio Sumimoto, Kanagawa, Japan, assignor to Kabushiki Kaisha Sumimoto Kagaku Kenkyusho, Kanagawa, Japan

Continuation of Ser. No. 343,907, Jan. 29, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 486,454
Claims priority, application Japan, Feb. 6, 1981, 56-17166
Int. Cl.³ B01D *27/10, 35/14*
U.S. Cl. 210—131 **7 Claims**



5. An apparatus for the filtration of lubricating oil for an internal combustion engine, comprising:

a filter element having horizontal and vertical axes, upper and lower surfaces, and made of paper accumulated in horizontal layers between which filtrate passes and having a filtrate outlet passageway vertically through the center thereof;

a body casing provided with said filter element therein;

an inlet pipe for liquid to be filtered;

an outlet pipe for filtrate, said inlet pipe and said outlet pipe being connected to said body casing, said outlet pipe being in communication with the filtrate outlet passageway of said filter element;

a pressure-receiving plate located on the upper surface of the said filter element such that the pressure of the liquid is exerted thereon to compress said filter element and provided with an air and oil release hole therein, said air and oil release hole being in communication with said filtrate outlet passageway and smaller in area than said inlet hole of said inlet pipe;

a replaceable cartridge case, said filter element and said pressure-receiving plate being positioned inside said replaceable cartridge case, said replaceable cartridge case having upper and lower surfaces provided with an inlet aperture for liquid to be filtered and an outlet aperture in communication with said filtrate outlet passageway of said filter element, respectively, and being prefilled with lubricating oil and additive;

a supporting plate abutting the lower surface of said filter element;

a connecting rod abutting the lower surface of said supporting plate and passing through the filtrate outlet passage way of said filter element and through the air and oil release hole in said pressure receiving plate; and

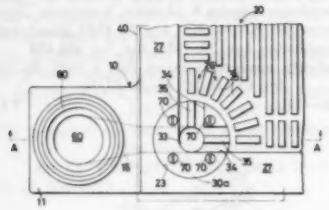
a stopper attached to the upper end of said connecting rod, holding said pressure receiving plate against said filter element, and allowing air to pass from and oil to pass into the filtrate outlet passage way when said filter element is compressed.

4,435,288

EXPRESSING PLATE ASSEMBLY FOR FILTER PRESS

Muneyuki Miyano, Sakai, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Jun. 28, 1982, Ser. No. 392,768
Claims priority, application Japan, Oct. 9, 1981, 56-161779
Int. Cl.³ B01D 25/12
U.S. Cl. 210—227 4 Claims



1. In an expressing plate for a plate-type filter press wherein flexible expressing sheets cover the opposite surfaces of a rigid core plate, the core plate has a peripheral frame portion, expressing fluid being fed between the core plate and expressing sheets, and aligned filtrate discharge openings are provided in the peripheral portions of the core plate and expressing sheets, the improvement comprising, fitting recesses in the opposite surfaces of said core plate around each said opening therein, a raised portion around each said opening in each expressing sheet on the inner face thereof facing said core plate and having a peripheral shape substantially conforming to that of said adjacent fitting recess to interfit therein, a seating ring recess around each said opening in each expressing sheet on the outer side thereof and smaller than said adjacent fitting recess, seating rings each having an opening therethrough and a peripheral shape substantially conforming to that of the adjacent seating ring recess and interfitting therein so that a pair of seating rings is disposed at each core plate opening one on each side of said core plate with said seating ring openings aligned with said core plate openings, means to clamp each said pair of seating rings together to clamp said expressing sheets to said core plate and maintain alignment of said openings, a plurality of ridges defining grooves therebetween which serve as filtrate passages on the outer face of each expressing sheet, and filtrate passage grooves on a part of the outer face of each seating ring substantially aligned with said grooves on said expressing sheets to be substantially continuous therewith.

4,435,289

SERIES ULTRAFILTRATION WITH PRESSURIZED PERMEATE

Barry R. Breslau, Action, Mass., assignor to Romicon, Inc., Woburn, Mass.

Filed Dec. 23, 1981, Ser. No. 333,743
Int. Cl.³ B01D 31/00, 13/00
U.S. Cl. 210—637 14 Claims

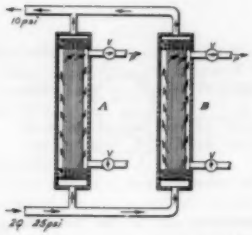
1. A method for separating solutes, colloidal particles or suspended matter from a solution or suspension of such matter by ultrafiltration which comprises:

(a) connecting multiple ultrafiltration membrane containing separatory units in series flow configuration, thereby providing, at least, a first unit, a last unit and optionally intermediate units;

(b) introducing a solution or suspension to be separated into the first unit at a pressure exceeding the maximum allowable transmembrane pressure difference for said membrane;

(c) concurrently applying a back pressure on the permeate side of said membrane to produce a transmembrane pressure difference in said first unit not exceeding the maximum allowable transmembrane pressure difference for said membrane;

(d) repeating steps (b) and (c) in at least each intermediate unit;



(e) withdrawing permeate from each unit; and

(f) recovering concentrate containing solutes, colloidal particles or suspended matter from the last serially connected unit.

4,435,290

PROCESS FOR THE TEMPORARY STORAGE OF RECYCLABLE LIQUID WASTES IN UNDERGROUND SALT CAVERNS

Walter Lindörfer, Kassel, and Wilhelm Jan-Held, Staufenberg, both of Fed. Rep. of Germany, assignors to Wintershall AG, Kassel, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,900
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141885
Int. Cl.³ C02F 1/66
U.S. Cl. 210—708 21 Claims

1. A process for temporary storage of recyclable pumpable liquid waste in an underground salt-enclosed cavern, which is provided with pipelines for filling and emptying, comprising the steps of:

(a) introducing said liquid waste into said cavern;

(b) neutralizing acid components in said liquid waste before, during or after step (a);

(c) allowing said neutralized liquid waste to stand in said cavern in order to separate into two liquid phases of differing specific gravities; and

(d) pumping out the phase having the lower specific gravity leaving the phase with the higher specific gravity.

4,435,291

BREAKPOINT CHLORINATION CONTROL SYSTEM

Theodore N. Matsko, Richmond Heights, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 22, 1982, Ser. No. 360,860
Int. Cl.³ C02F 1/76
U.S. Cl. 210—739 7 Claims

1. A method for the breakpoint chlorination of waste water containing an amount of ammonia to be oxidized comprising:

supplying the waste water at a selected flow rate to a mixer tank;

measuring the amount of ammonia in the supplied waste water;

initially dosing the waste water in the mixing tank with a first amount of chlorine which is a selected multiple of the measured ammonia amount by weight;

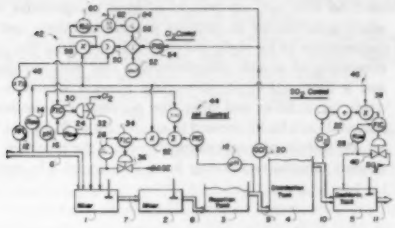
supplying the dosed waste water from the mixing tank to a reaction tank where chlorine and ammonia react;

supplying the waste water out of the reaction tank;

measuring the residual chlorine in the waste water coming from the reaction tank;

calculating the derivative of the residual chlorine with re-

spect to the amount of chlorine added to the waste water; and



with the derivative being negative dosing the mixing tank with a second amount of chlorine according to an induced signal which adds chlorine until the derivative becomes positive.

4,435,292

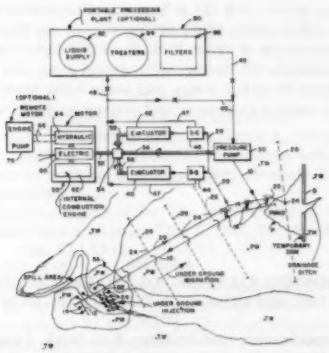
PORTABLE METHOD FOR DECONTAMINATING EARTH

James L. Kirk, Findlay, Ohio, and Robert J. Ohneck, Lambertville, Mich., assignors to KBI Corp., Findlay, Ohio

Continuation of Ser. No. 115,992, Jan. 28, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,345

Int. Cl.³ C02F *1/74*

U.S. Cl. 210—747 **17 Claims**



1. A method for decontaminating the soil below an area of earth which has been contaminated by a spill by means of a flexible portable reversible closed fluid circulating system, comprising the steps of:

(A) testing the area for determining the boundaries of the contamination,

(B) inserting a plurality of relatively closely spaced perforated pipes around and into said soil below said area,

(C) circulating a flushing fluid under positive pressure into said pipes around the determined contaminated area,

(D) simultaneously under negative pressure removing said circulating flushing fluid which contains contaminants from said pipe in said determined contaminated area,

(E) from at least a portion of the removed circulating fluid which contains contaminants, and

(F) injecting the decontaminated flushing fluid back into said soil under said positive pressure to maintain said closed fluid circulating system.

4,435,293

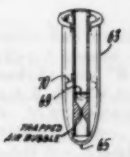
PARTICLE WASHING SYSTEM AND METHOD OF USE

Henry A. Graham, Jr., Annandale; Johnna B. Hawk, Rocky Hill, and Rosemary K. Chachowski, Manville, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Aug. 5, 1981, Ser. No. 290,267

Int. Cl.³ B01D *21/26*; B01L *11/00*

U.S. Cl. 210—772 **14 Claims**



1. A method for washing and collecting particles contained in a first fluid for use with a system comprising (1) an outer zone for containing a wash solution and (2) an inner zone insertable into said outer zone and having a chamber to which the first fluid may be added, said chamber having a bottom wall with an orifice for providing communication between the first fluid placed in said inner zone chamber and the wash solution contained in said outer zone, said method comprising the steps of:

placing in said outer zone a wash solution having a density at the minimum substantially equal to that of the first fluid, and at the maximum no greater than that of the particles;

adding to said inner zone the first fluid containing the particles to be washed and collected;

inserting said inner zone into said outer zone containing the wash solution whereby an air bubble is trapped at the orifice;

applying force for displacing said air bubble and for moving the particles from the first fluid through the orifice and the wash solution to substantially the bottom of the outer zone; and

removing said first fluid, said inner zone, and said wash solution.

4,435,294

POLYCYCLIC PYROMELLITATES AND USE THEREOF ON POLYESTERS AND POLYAMIDES

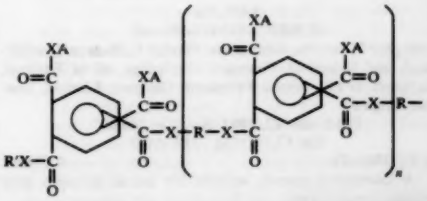
Bryce C. Oxenrider, Florham Park, and David J. Long, Stanhope, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,945

Int. Cl.³ C07C *153/07*; D06M *13/20*

U.S. Cl. 252—8.6 **18 Claims**

1. A composition comprising a polycyclic compound of the formula:



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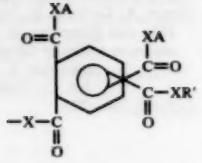
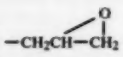
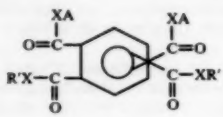


wherein X is independently at each occurrence —O—, —S—, —N(CH$_3$)— or —NH—; wherein A is alkyl of 2–24 carbons or —R"—(CF$_2$)$_p$CF$_3$ with R" being alkylene of 1–6 carbons and p being an integer of 3–13, wherein R' is a monovalent radical selected from the group consisting of —CH$_2$CH(OH)CH$_2$Cl, —CH$_2$CH(OH)CH$_2$Br, —CH(CH$_2$OH)(CH$_2$Cl), —CH(CH$_2$OH)(CH$_2$Br), —(CH$_2$)$_m$Cl, —(CH$_2$)$_m$Br, —CH(CH$_2$Cl)$_2$, —CH(CH$_2$Br)$_2$,



and —(CH$_2$)$_q$—Si(OR"')$_3$, with m being an integer of 1–8, q being an integer of 1–8, and R"' being alkyl of 1–3 carbons; wherein R is a divalent radical selected from the group consisting of alkylene of 2–6 carbons, —CH$_2$CH(CH$_2$Cl), —CH$_2$C(CH$_2$Cl)$_2$CH$_2$—, —CH$_2$CH=CHCH$_2$—, 1,3-phenylene and 1,4-phenylene; n is an integer of 0–20; or mixtures of such polycyclic compounds with different values of n or of such polycyclic compounds with different values of n and with the monocyclic compound:



4,435,295

SULFONATE FOR WATERFLOODING

Olaf M. Stokke, and Roy C. Sias, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed May 17, 1982, Ser. No. 379,210

Int. Cl.^{3} C09K *7/02;* E21B *43/16*

U.S. Cl. 252—8.55 D **6 Claims**

1. An improved sulfonate composition for use in aqueous phase stable waterflooding systems comprising

(a) from about 80 to about 20 parts per weight of monoalkyl benzene having an average molecular weight of from about 400 to about 490, together with

(b) from about 20 to about 80 parts by weight of n-alkyl aromatic compounds having an average molecular weight of from about 325 to about 385, wherein the mixture is sulfonated to a nonsulfonate/sulfonate ratio of about 0.10 to about 0.25.

4,435,296

LUBRICATING GREASE

Christopher P. Brooks, Addlestone; Stanley C. Dodson, Leatherhead, and Robert H. Newman, Weybridge, all of England, assignors to The British Petroleum Company Limited, London, England

Filed May 22, 1981, Ser. No. 266,607

Int. Cl.^{3} C10M *7/30, 1/10*

U.S. Cl. 252—28 **4 Claims**

1. A lubricating grease, suitable for use as an open gear lubricant, comprising:

a lubricating base oil;

from 2 to 20%, by weight of total composition of a clay thickener;

from 2 to 12% wt., by weight of total composition of an alkali metal borate as extreme pressure additive; and

a combination of an olefin polymer selected from the group consisting of atactic polypropylene and polyisobutylene and a light coloured particulate mineral which is zinc oxide, as tackifier and filler, the polymer and particulate material each being present in an amount of from 3 to 12% wt. by weight of total composition and the polymer; particulate mineral ratio being from 1.5:1 to 1:1.5 by weight.

4,435,297

CARBOXYLIC ACID DERIVATIVES OF ALKANOL TERTIARY MONOAMINES

John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 946,294, Sep. 27, 1978, Pat. No. 4,329,249. This application Mar. 4, 1982, Ser. No. 352,695

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.^{3} C10M *1/32, 3/26*

U.S. Cl. 252—34.7 **171 Claims**

1. A composition comprising: water; and dispersed in said water nitrogen-containing, phosphorus-free carboxylic acid derivative made by reaction, at a temperature in the range of about 30° to the decomposition temperature of one or more of the reaction components, of (A) at least one carboxylic acid acylating agent with (B) at least one alkanol tertiary monoamine, said acylating agent having at least one hydrocarbyl-based substituent of about 20 to about 500 carbon atoms and said monoamine (B) having one hydroxyl group and a total of up to about 40 carbon atoms, said water being provided in an effective amount to disperse said derivative in said water.

4,435,298

AMMONIUM SALTS OF POLYMALEIC ACIDS, AND THEIR USE AS CORROSION INHIBITORS IN MINERAL OILS

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim; Hans-Henning Vogel, Frankenthal; Erich Schwartz, Ludwigshafen, and Claus P. Jakob, Viernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,765

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039977

Int. Cl.^{3} C10M *1/32;* C01C *87/00;* C10G *9/12*

U.S. Cl. 252—34 **6 Claims**

1. An ammonium salt having an equivalents ratio of 1:1 of a polymaleic acid having a molecular weight of from 200 to 1,500 and an amine component, of the formula

where R^1 and R^2 are identical or different and are hydrogen, C$_9$–C$_{20}$-alkyl or C$_9$–C$_{20}$-alkenyl and R^3 is C$_9$–C$_{20}$-alkyl or C$_9$–C$_{20}$-alkenyl.

4,435,299

PREPARATION OF HIGH DROPPING POINT LITHIUM COMPLEX SOAP GREASE

Don A. Carley, Houston; Arnold C. Witte, Jr., Port Neches; William B. Green, Nederland, and Kermit W. Doerr, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,744
Int. Cl.³ C10M 5/14
U.S. Cl. 252—41 20 Claims

1. A process for preparing a lithium soap grease having a dropping point above 500° F. which comprises the steps of:

(a) dissolving a C_{12} to C_{24} hydroxy fatty acid and a C_4 to C_{12} aliphatic dicarboxylic acid in approximately a 3:1 to 0.5:1 mole ratio range in a lubricating oil to form an oil-acid mixture in which the amount of oil employed comprises about 30 to 50 weight percent of the total amount of oil employed in the finished composition;

(b) adjusting the oil and acid mixture to a temperature below about the boiling temperature of water;

(c) adding slowly at a controlled rate of below about 0.30 lbs./minute a concentrated aqueous solution of approximately 8 to 10 weight percent of lithium hydroxide in an amount slightly in excess of that required to neutralize the acids;

(d) maintaining the reaction conditions for a period of time sufficient to obtain substantially complete saponification between the fatty acids and lithium hydroxide;

(e) dehydrating the mixture of lubricating oil and lithium complex soap;

(f) heating the mixture until it is uniformly at a temperature of from about 390° F. to about 430° F.;

(g) rapidly cooling the mixture to about 375° F. or below by quenching it with approximately 5 to 25 weight percent of the total amount of lubricating oil employed in the finished composition;

(h) incorporating the remainder of the lubricating oil into the grease composition.

4,435,300

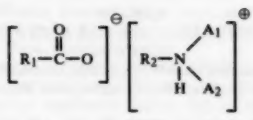
DETERGENT COMPOSITIONS

Jacob J. Guth, Upper Black Eddy, Pa.; Diane L. Spilatro, Piscataway, and Robert J. Verdicchio, Succasunna, both of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

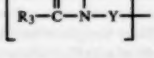
Continuation-in-part of Ser. No. 241,874, Mar. 9, 1981, abandoned. This application May 5, 1982, Ser. No. 375,074
Int. Cl.³ C11D 1/10, 1/65, 1/88, 1/94
U.S. Cl. 252—117 9 Claims

1. A low irritating detergent and cleansing composition wherein the active ingredients consist essentially of

(a) from about 1 to 50% by weight of an amphoteric-fatty acid complex of the formula



wherein R_1 is alkyl or substituted alkyl containing from about 5 to 17 carbon atoms and mixtures thereof; R_2 is alkyl containing from about 6 to 18 carbon atoms and mixtures thereof or alkyl amido of the formula



wherein R_3 is alkyl containing from about 5 to 17 carbon atoms, Z is H or lower alkyl containing from 1 to 4 carbon atoms; and Y is alkylene containing from 2 to 4 carbon atoms;

A_1 and A_2 are the same or different and at least one of A_1 and A_2 are selected from the group of anionic salt moieties consisting of the following:

$$—CH_2CH_2—COOX]_n$$

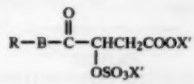
$$—CH_2—COOX]_n$$

$$—CH_2CHOH—CH_2—SO_3X]_n$$

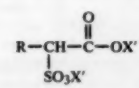
$$—CH_2—CHOH—CH_2—OPO_3X]_n$$

wherein X is a water soluble cation and n is an integer of 1 or 2 with the proviso that if only one of A_1 and A_2 are selected from the anionic salt moieties above the other is lower alkyl or lower hydroxyalkyl containing from 1 to 4 carbon atoms; and

(b) from about 2 to 50% by weight of an anionic surfactant selected from the group consisting of alkyl sulfosuccinates of the formula



alkyl ether carboxylates, α-sulfo fatty acids of the formula



alkyl succinates, acyl sarcosinates and fatty acid protein condensates; wherein R is alkyl from 8 to 17 carbon atoms, X' is hydrogen or a water soluble cation and B is O, N or $O—C_2—CH_2O)_m$ wherein m is an integer of from 1 to 5; and wherein the amphoteric-fatty acid complex and the anionic surfactant are in the ratio of from about 1:4 to 4:1.

4,435,301

PREPARATION OF OVERBASED MAGNESIUM PHENATES

Cecil G. Brannen, Wayne Township, DuPage County, and Mack W. Hunt, Naperville, both of Ill., assignors to Standard Oil Company, (Indiana), Chicago, Ill.

Filed Apr. 19, 1982, Ser. No. 369,823
Int. Cl.³ C10M 1/40
U.S. Cl. 252—33.2 12 Claims

1. A process for the preparation of an overbased magnesium phenate composition which comprises:

(a) reacting magnesium oxide in a substantially inert liquid diluent with: (i) at least one phenolic material selected from the group consisting of oil-soluble hydrocarbyl-substituted phenols and oil-soluble sulfurized hydrocarbyl-substituted phenols, (ii) an oil-soluble ammonium sulfonate, (iii) a monohydric alcohol of from 1 to 4 carbon atoms, and (iv) water, wherein the amount of magnesium oxide is in excess of the stoichiometric amount required for conversion of said sulfonate and phenolic material to neutral magnesium salts, and the ratio of equivalents of phenolic material to equivalents of ammonium sulfonate is from about 5 to about 30;

(b) removing substantially all of said alcohol from the product of (a); and

(c) contacting the product of (b) with carbon dioxide at a temperature in the range from about 0° to about 120° C.

4,435,302
CONCENTRATING AND RECLAIMING MAGNETIC FLUIDS

George W. Reimers, Burnsville, and Sanaa E. Khalafalla, Minneapolis, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 28, 1982, Ser. No. 383,060
Int. Cl.³ H01F 1/25, 1/00; C10M 3/00; C09D 11/00
U.S. Cl. 252—62.51 **5 Claims**

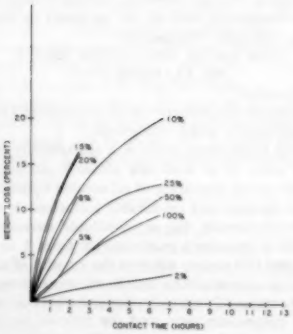
1. A method for concentrating a dilute dispersion of magnetic particles in water, said dispersion having a concentration of magnetic particles of about 0.1 to 5 grams per liter and having been formed by dilution of a saturated fatty acid-stabilized magnetic fluid, consisting essentially of:
(a) adding hydrochloric acid to the dilute dispersion in an amount sufficient to flocculate the magnetic particles,
(b) separating the flocculated magnetic particles from the supernatant liquid, and
(c) admixing the flocculated magnetic particles with an aqueous ammonia solution of a concentration, and in an amount, sufficient to redisperse the magnetic particles and form a magnetic fluid having the desired concentration of magnetic particles.

4,435,303
DESCALING COMPOSITION

Khodabandeh Abadi, 5719 N. Camino Del Conde, Tucson, Ariz. 85718

Filed Jan. 3, 1983, Ser. No. 455,298
Int. Cl.³ C02F 5/08, 5/10; C23F 11/00
U.S. Cl. 252—80 **33 Claims**

CONCENTRATION (%)	0	10	15	20	25	50	100
TIME ELAPSED (hrs.)	SCALE CHIP WEIGHT (grams)						
0	3.5	7.8	7.5	7.6	8.3	5.2	5.2
1	3.5	7.5	7.0	7.2	8.2	"	"
2	3.5	7.1	6.7	7.0	7.9	"	"
3	3.4	6.9	6.6	6.9	7.8	4.9	5.0
4	3.4	6.9	6.6	6.7	7.6	4.7	4.8
6	3.4	6.3	6.5	6.7	7.3	4.7	4.6
9	3.4	6.3	6.4	6.6	7.3	4.6	4.6



1. A composition comprising
(a) an anionic fatty alcohol metal sulfate surfactant;
(b) a nonionic, substituted poly(ethylene oxide) surfactant;
(c) an ethanol amine of the formula

$$MR_{3-x}(CH_2CH_2OH)_x;$$

wherein R is hydrogen or an alkyl group of 1–4 carbon atoms and x is an integer of from 1 to 3;
(d) zinc;
(e) hydroxyacetic acid; wherein the ratio by weight of (d) to (a)+(b) is between about 9:1 and 10:1, the ratio by weight of (a):(b):(c) is about 1:1:1 and the ratio by weight of (e) to (a)+(b)+(c) is about 1:2.

29. A method for perparing a descaling composition comprising the steps of:
(a) mixing a nonionic, substituted-polyethylene oxide surfactant with a mixture of zinc and an anionic fatty alcohol metal sulfate surfactant;
(b) adding an ethanolamine of the formula

$$NR_{3-x}(CH_2CH_2OH)_x;$$

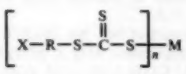
wherein R is hydrogen or an alkyl group of 1–4 carbon atoms and x is an integer of 1–3; and
(c) adding hydroyacetic acid;
wherein the ratio by weight of zinc to the nonionic surfactant plus the anionic surfactant is between about 9:1 and 10:1, the ratio by weight of the nonionic surfactant to the ethanolamine is about 1:1:1, and the ratio by weight of hydroxyacetic acid to the nonionic surfactant plus the anionic surfactant plus the ethanol amine is about 1:2.

4,435,304
SULFUR BASED METAL CLEANERS

Merlin R. Lindstrom; Robert M. Parlman, and James B. Kimble, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1982, Ser. No. 441,586
Int. Cl.³ C11D 7/06
U.S. Cl. 252—156 **8 Claims**

1. An aqueous composition useful for cleaning metal surfaces consisting essentially of a Group IA or IIA metal hydroxide present in an amount from about 0.1 to about 5.0 weight percent of the composition and at least one active metal cleaning ingredient of the formula



wherein R can be any hydrocarbylene radical having 1 to 6 carbon atoms, X is H or OH, M is any group IA or IIA metal and n is the valence of M present in an amount from about 0.25 to about 10.0 weight percent of the composition.

4,435,305
CHEMICAL FORMULATION FOR RECLAIMING SILK SCREENS

Skevos N. Tsoukalas, 1426 Womack Rd., Dunwoody, Ga. 30338, and John H. Andros, 3018-D Spring Hill Rd., Smyrna, Ga. 30080

Filed Jan. 24, 1983, Ser. No. 460,669
Int. Cl.³ C11D 7/06
U.S. Cl. 252—158 **9 Claims**

1. A method for removing hardened stencil emulsion and ink from the surface of a silk screen comprising the steps of: contacting said silk screen at ambient temperatures for a period of time sufficient to loosen said stencil and ink from said silk screen surface with a solution of a non-aqueous formulation consisting essentially of approximately 20–60% by weight of a C_1–C_{12} alcohol, 2–10% by weight of an alkali metal hydroxide and 20–60% by weight of a hydrocarbon solvent and separating said loosened stencil and ink from said silk screen surface by a high pressure water jet stream.

4,435,306

STABLE COAL-WATER SUSPENSIONS AND THEIR PREPARATION

Geza L. Kovacs, Baltimore, Md., assignor to Koal, Inc., Baltimore, Md.

Filed Nov. 2, 1981, Ser. No. 317,545
Int. Cl.³ C10L 1/32
U.S. Cl. 252—173 17 Claims

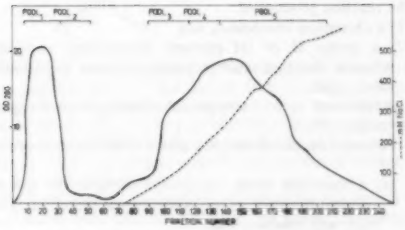
1. A non-settling fuel composition consisting essentially of a particulate suspension of coal, water and a fatty acid soap, the coal concentration in said composition being at least 50% by weight and the soap concentration in the water phase of said composition being above about 5% by weight, said soap further characterized in having sufficient free base to neutralize all acid associated with or released by said coal.

4,435,307

DETERGENT CELLULASE

Peder O. Barbesgaard, Farum; Georg W. Jensen, Bagsvaerd, and Poul Holm, Bronshoj, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Apr. 23, 1981, Ser. No. 256,275
Claims priority, application Denmark, Apr. 30, 1980, 1872/80
Int. Cl.³ D06M 15/02
U.S. Cl. 252—174.12 14 Claims



1. A harshness reducing detergent additive for a main wash detergent composition, comprising

a non-dusting granulate containing a fungal cellulase producible by a strain of *Humicola insolens* or *Humicola grisea* var. *thermoidea*.

4,435,308

COMPOSITIONS BASED ON ALUMINUM HYDROXYCHLORIDES

Maryvonne Thomas, Boulogne Billancourt, and Jean Grosbois, L'Isle Adam, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 709,178, Jul. 27, 1976, abandoned. This application Jun. 8, 1978, Ser. No. 913,853
Claims priority, application France, Jul. 31, 1975, 75 23926
Int. Cl.³ C02F 5/10
U.S. Cl. 252—181 4 Claims

1. A composition of matter comprising (i) aluminum hydroxychloride, (ii) SO_4^{-2} anions in an amount of from about 0.05 to 0.3 M/gram-atom of aluminum present, and (iii) at least one anion of an organic acid selected from the group consisting of citric acid, sulfosalicyclic acid, pyrocatechol-3,5-disulfonic acid, chromotropic acid and mixtures thereof, said anion forming anionic or uncharged complexes with aluminum in a neutral or nonacidic medium and said anion being present in an amount of at least about 0.01 M/gram-atom of aluminum present, and (iv) said composition exhibiting a basicity, expressed as the ratio OH/Al, of from about 1.2:1 to 1.7:1.

4,435,309

METHOD OF LIQUIFYING WAXY MATERIALS

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Sep. 18, 1981, Ser. No. 303,703
Int. Cl.³ B01J 13/00
U.S. Cl. 252—314 9 Claims

1. A method of liquifying an organic material which is a waxy solid at ambient temperature, which comprises:

(a) admixing a solvent with said organic material at a temperature such that a solution is formed;

(b) cooling the solution to a temperature such that a solid or semi-solid, viscous material is formed; and

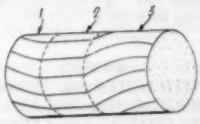
(c) shearing said solid or semi-solid material to produce particles of said organic material suspended in said solvent; wherein the concentration of said solvent is sufficient to produce a liquid as a result of step (c) and to produce a solid or semi-solid, viscous material as a result of step (b); wherein said organic material is selected from the group consisting of amines, amine salts, quaternary ammonium salts, and mixtures thereof; and wherein said solvent is selected from the group consisting of water, alcohols having from one to five carbon atoms, and mixtures thereof.

4,435,310

MANUFACTURE OF MULTICOLORED DETERGENT BARS HAVING SINUSOIDAL STRIPING

Michael R. Lowry, Chester, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 195,209, Oct. 17, 1980, abandoned, which is a continuation of Ser. No. 12,619, Feb. 16, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,854
Claims priority, application United Kingdom, Feb. 20, 1978, 6653/78
Int. Cl.³ C11D 9/44, 13/08, 13/18, 17/00
U.S. Cl. 252—370 4 Claims



1. A method of manufacturing detergent bars having curved surface striping wherein a continuous log of a longitudinally striped detergent mass is extruded from a nozzle and the log is subjected to torque about the longitudinal axis at a station spaced from the nozzle with subsequent cutting into billets and stamping to form bars, characterized in that the torque is reversed to provide a reversing spiral striping on the log and at least a half of a cycle of striping of substantially sinusoidal form along the longitudinal axis of the bar.

4,435,311

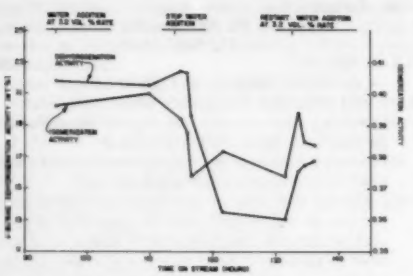
CONTINUOUS REACTIVATION OF AMS-1B-CONTAINING CATALYST SYSTEMS

David L. Sikkenga, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 422,745
Int. Cl.³ B01J 37/10
U.S. Cl. 502—22 18 Claims

1. A process to reactivate a noble metal-containing AMS-1B crystalline borosilicate comprising contacting such catalyst

with water at reactivation conditions comprising a temperature of about 100° to about 750° C., a pressure of about 0.1 to



about 100 atmospheres and a weight hourly space velocity of about 0.1 to about 40 hr^{-1}.

4,435,312

ASSOCIATIONS OF BASES, RESULTING FROM THE COMBINATION OF A LITHIUM ALKYL OR ARYL WITH AN ALKALI METAL AMIDE OR HYDRIDE, POLYMERIZATION PROCESS IN WHICH THEY ARE USED, AND PRODUCT OBTAINED

Serge Lecolier, Janville sur Juine, and Serge Raynal, Draveil, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jan. 18, 1982, Ser. No. 340,078

Claims priority, application France, Jan. 19, 1981, 81 00854

Int. Cl.³ C08F *4/48*

U.S. Cl. 502—157 **8 Claims**

1. An association of bases, of the general formula:

$$n'RLi—n\ MZ$$

in which: n and n' are the numbers of mols of each compound, R is an alkyl or aryl radical, M is an alkali metal which is, sodium or potassium and Z is a hydride or an inorganic amide, the ratio n/n' being between 0.2 and 50.

4,435,313

ELECTRODE WITH OUTER COATING FOR EFFECTING AN ELECTROLYTIC PROCESS AND PROTECTIVE INTERMEDIATE COATING ON A CONDUCTIVE BASE, AND METHOD OF MAKING SAME

Michael Katz, Geneva; Jean M. Hinden, Chambesy, and Jürgen F. Gauger, Le Lignon, all of Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 17, 1981, Ser. No. 293,381

Claims priority, application United Kingdom, Aug. 18, 1980, 8026830; Apr. 9, 1981, 8111257

Int. Cl.³ C25B *11/16, 11/08*

U.S. Cl. 502—101 **8 Claims**

1. A method of manufacturing an anode comprising a stable outer coating effective for carrying out an electrolytic process and a protective intermediate coating formed on an anode base consisting essentially of titanium, characterized by the steps of:

(a) forming said protective intermediate coating by: applying to said anode base successive layers of a homogeneous solution

of at least one thermally decomposable compound of a platinum group metal and an organic precursor compound selected from the group consisting of polyacrylonitrile, polybenzoxazole and poly-p-phenylene; drying each of said layers; and subjecting the dried layers to heat treatment in an oxidizing atmosphere, in such a manner as to thermally convert said organic precursor compound into a conducting insoluble polymer network adhering to the anode base, while said metal compound is thermally converted to a platinum group metal oxide finely dispersed throughout said conducting insoluble network formed in situ on the anode base, and so as to thereby provide said protective intermediate coating adhering to said anode base; and

(b) forming on the protective intermediate coating thus formed said stable outer coating effective for carrying out an electrolytic process.

4,435,314

PROCESS OF PREPARING A POLYMERIZATION CATALYST AND PREPARATION OF ETHYLENE POLYMERS WITH THIS CATALYST

Lambertus J. M. A. van de Leemput, Echt, and Godefridus A. H. Nooijen, Helden-Panningen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Aug. 5, 1982, Ser. No. 405,374

Claims priority, application Netherlands, Aug. 6, 1981, 8103703

Int. Cl.³ C08F *4/64, 4/70, 4/62*

U.S. Cl. 502—154 **7 Claims**

1. Process of preparing a chromium-containing catalyst component, which upon activation with heat at a temperature of from 200° to 1200° C. will effect the polymerization of alpha-olefins, comprising depositing jointly or subsequently from solution onto an inert, particulate, inorganic support the following components:

(a) a first component which is a chromium complex comprising the reaction product of:

(1) a chromium compound, and

(2) a group II or III element hydrocarbyl compound wherein the hydrocarbyl group contains 1–20 carbon atoms; and

(b) at least one second component selected from the group consisting of

(1) a transition metal complex which is the reaction product of:

(a) a transition metal compound wherein the metal is selected from the group consisting of nickel, molybdenum, and titanium, and

(b) a group II or III metal hydrocarbyl compound wherein the hydrocarbyl groups contain 1–20 carbon atoms, and

(2) a transition metal alkoxide or carboxylic acid salt wherein the metal is selected from the group consisting of nickel, molybdenum, and titanium.

4,435,315

USE OF ALKYL-SUBSTITUTED 1,3-DIOXOLANES AS PERFUMING AGENTS

Jens Conrad, Hilden; Ulf-Armin Schaper, Düsseldorf, and Klaus Bruns, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Atkien, Düsseldorf-Holthausen, Fed. Rep. of Germany

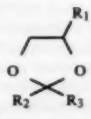
Continuation of Ser. No. 226,201, Jan. 19, 1981, abandoned. This application Apr. 7, 1982, Ser. No. 366,374

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004661

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 R **29 Claims**

1. A perfumery composition consisting essentially of from about 1 to 50 percent by weight of at least one alkyl-substituted 1,3-dioxolane of the formula



(I)

wherein R_1 represents an alkyl of from 4 to 12 carbon atoms; R_2 represents a cycloalkyl or cycloalkenyl of from 5 to 8 carbon atoms, an optionally alkyl-substituted aryl, or a furyl group; and R_3 represents hydrogen or an alkyl of from 1 to 3 carbon atoms, and the remainder of customary constituents of perfumery compositions.

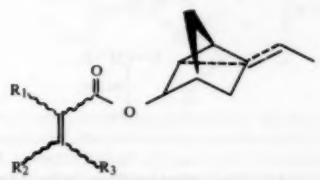
4,435,316

NORBORNYL ESTERS AND USES THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF A CONSUMABLE MATERIAL AND PROCESS FOR PREPARING SAME

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jul. 8, 1982, Ser. No. 396,288
Int. Cl.³ C07C *69/533*; A61K *7/46*
U.S. Cl. 252—522 R **10 Claims**

1. At least one compound defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon bond and the other of the dashed lines represents no bond; wherein the wavy lines represent a "cis" or a "trans" juxtaposition of the R_1, R_2, R_3 and carboalkoxy moieties around the carbon-carbon double bond; wherein R_1, R_2 and R_3 each represent methyl or hydrogen with the proviso that at least one of R_1, R_2 and R_3 is hydrogen.

10. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to a perfume composition or cologne an aroma augmenting or enhancing quantity of at least one compound defined according to claim 1.

4,435,317

DISHWASHING LIQUID INCLUDING ALKYL SULFATE, ALKYL ETHER SULFATE, ALKYLBENZENE SULFONATE AND MAGNESIUM

Jan Gerritsen, Strombeek-Bever, Belgium; Ronald E. Atkinson, Hexham, Anthony F. Martin, Blyth, Mark R. Atkins, Gosforth, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 255,405, Apr. 20, 1981, abandoned. This application Jan. 25, 1983, Ser. No. 460,967
Claims priority, application United Kingdom, Apr. 24, 1980, 8013627; Oct. 20, 1980, 8033730
Int. Cl.³ C11D *1/37, 1/831*
U.S. Cl. 252—547 **17 Claims**

1. A physically stable aqueous liquid detergent composition consisting essentially of

(a) from about 6% to about 16% by weight of the composition of a primary C_{10}–C_{16} alkyl sulphate salt;

(b) from about 0.5% to about 20% by weight of the composition of a water-soluble C_{10}–C_{16} primary alkyl ethoxy sulphate salt containing an average of from about 2 to about 6 ethylene oxide groups per alkyl group in the alkyl ether sulphate, and

(c) from about 10% to about 28% by weight of the composition of a water-soluble substantially linear C_{10}–C_{16} alkyl benzene sulphonate salt;

provided that the ratio of the total weight of components (a) and (c) to the weight of component (b) is $\leqq$33:1, and that the composition contains magnesium ion in a molar amount corresponding to 0.45–0.55X where X is the number of moles of C_{10}–C_{16} alkyl sulphate present.

4,435,318

ELECTRODIALYSIS PREPARATION OF PURIFIED AHF CONCENTRATE

Patrea L. Pabst, Jamaica Plain, and David H. Bing, Brookline, both of Mass., assignors to Ionics, Incorporated, Watertown, Mass.

Filed May 22, 1981, Ser. No. 266,400
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 B **10 Claims**

1. A process for the separation and recovery of Factor VIII, von Willebrand's factor, and Factor V from plasma and plasma derivative streams having a pH normally between about 6 to 8.5 comprising removing from said blood stream when present substantially all initial turbidity therein, subsequently passing said blood plasma into and out of an apparatus containing one or more semi-permeable membranes which separate said plasma stream from a salt receiving stream thereby decreasing the salt content of said plasma stream between about 45 to 80% to cause the formation of a protein turbidity enriched in Factor VIII, von Willebrand's factor and Factor V, subsequently removing substantially all of said turbidity and maintaining the temperature of said plasma stream during said separation and recovery process in the range of between about 4°–40° C., and at substantially its original starting pH level.

4,435,319

PREPARATION OF PROTEIN ISOLATE FROM SUNFLOWER SEED

Robert J. Pearce, Beaumaris, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jul. 15, 1983, Ser. No. 514,341
Claims priority, application Australia, Jul. 15, 1982, PF4882
Int. Cl.³ A23J *1/14*
U.S. Cl. 260—123.5 **9 Claims**

1. A process for the production of a protein isolate from sunflower seed meal, which process comprises the sequential steps of:

(1) treating a suspension of sunflower seed meal with an acid at a pH of between 4.0 and 7.0;

(2) separating the insoluble residue from the protein extract;

(3) resuspending the insoluble residue and repeating steps (1) and (2) sequentially on the residue until the desired depletion of colour has been achieved;

(4) resuspending and treating the insoluble residue with an acid other than sulphuric acid at a pH $<$4.0;

(5) separating the insoluble residue from the protein extract;

(6) repeating steps (4) and (5) until the desired amount of protein has been extracted;

(7) combining the protein extract from steps (2), (3), (5) and (6) and recovering the protein therefrom by either precipitation with an acid or by ultrafiltration.

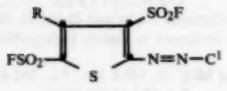
4,435,320

DISPERSE AZO DYES FROM 2-AMINO-3,5-BISFLUOROSULPHONYL THIOPHENE AND ANILINE, TETRAHYDROQUINOLINE, AND BENZOMORPHOLINE COUPLERS

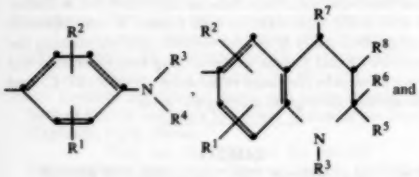
Robert N. Gourley, Liverpool, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,831
Claims priority, application United Kingdom, Nov. 4, 1981, 8133251
Int. Cl.³ C09B *29/033, 29/09, 29/36, 29/44*
U.S. Cl. 260—152 **11 Claims**

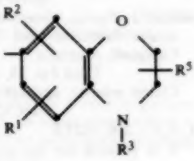
1. A compound having the formula



wherein R is hydrogen, alkyl, or alkyl substituted with aryl or cycloalkyl; and C^1 is a coupler selected from those of the formulae:



and



wherein:

R^1 and R^2 are each selected from hydrogen, fluorine, chlorine, bromine, alkyl, alkoxy, phenoxy, alkylthio, arylthio, and radicals having the formula —NH—X—R^9 in which X is —CO—, —COO—, or —SO_2— and R^9 is selected from alkyl and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulphonyl, alkylthio, alkanoyloxy, and alkoxy, and when X is —CO—, R^9 is also selected from hydrogen, amino, alkenyl, alkylamino, dialkylamino, arylamino, aryl, or furyl;

R^3 and R^4 are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two groups selected from alkyl, —OH, alkoxy, halogen and hydroxy substituted alkyl; phenyl or phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; straight or branched alkenyl; straight or branched alkyl and such alkyl substituted with one to three of the following: hydroxy; halogen; cyano; alkoxy; alkoxy-alkoxy; alkanoyloxy; phenoxy; phenylcarbamoyloxy; cyclohexyl; phenyl or phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; alkamoylamino; carbamoyl; sulphamoyl; alkylsulphamoyl; alkylsulphonamido; phenylsulphonamido; alkoxycarbonylamino; alkylcarbamoyloxy; alkoxycarbonyl; alkoxycarbonyloxy; alkenylcarbonylamino; or R^3 and R^4 combined is pentamethylene, ethyleneoxyethylene or ethylenesulphonylethylene; and

R^5, R^6, R^7 and R^8 are each selected from hydrogen and alkyl.

4,435,321

AZETIDINONE 4-DISULFIDES

Takashi Kamiya, Suita; Yoshihisa Saito, Takarazuka; Tsutomu Teraji, Hirakata; Osamu Nakaguti, Osaka, and Teruo Oku, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

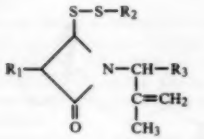
Division of Ser. No. 852,053, Nov. 16, 1967, Pat. No. 4,367,340, which is a division of Ser. No. 711,980, Aug. 5, 1976, Pat. No. 4,071,527, which is a division of Ser. No. 430,688, Jan. 4, 1974, Pat. No. 3,993,646, which is a continuation-in-part of Ser. No. 266,470, Jun. 26, 1972, abandoned. This application Dec. 1, 1980, Ser. No. 211,911

Claims priority, application Japan, Jun. 24, 1971, 46-46158; Aug. 14, 1971, 46-61776; Aug. 14, 1971, 46-61777; Aug. 18, 1971, 46-62687; Aug. 21, 1971, 46-63885; Aug. 21, 1971, 46-63886; Sep. 9, 1971, 46-70018; Dec. 23, 1971, 46-2516

Int. Cl.[3] **C07D** *205/08, 401/12, 409/12, 417/12*

U.S. Cl. 260—239 A **8 Claims**

1. An oxoazetidine compound of the formula:



wherein

R_1 represents amino or amino substituted with a pharmaceutically acceptable carboxylic acyl protective group for the amino substituents in penicillin compounds,

R_3 represents a pharmaceutically acceptable carboxy, esterified carboxy which is esterified with lower alkyl, 1-cyclopropylethyl or trihalo(lower)alkyl, or salt of said carboxy group employed in penicillin compounds, and

R_2 represents a pharmaceutically acceptable group selected from the group consisting of quinolyl, lower alkanoyl and thiadiazolyl substituted by lower alkyl.

4,435,322

HETEROCYCLIC COMPOUNDS CONTAINING AN ALKOXYCARBONYL AND A SUBSTITUTED METHYL GROUP

Karoly Lempert; Kalman Harsanyi; Gabor Doleschall; Gyula Hornyak; Jozsef Nyitrai, all of Budapest; Karoly Zauer, Szentendre; Jozsef Fetter, Budapest; Gyula Simig, Budapest; Zsuzsanna Visky nee Gombos, Budapest, and Gizella Barta nee Szalai, Vecses, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

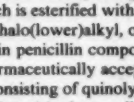
Filed Sep. 11, 1981, Ser. No. 301,191

Claims priority, application Hungary, Sep. 15, 1980, 2264/80

Int. Cl.[3] **C07D** *205/08, 487/04*

U.S. Cl. 260—239 A **7 Claims**

1. A compound of the formula (IV)



wherein

R is benzyl or benzhydryl;

Y is a group of the formula —COOZ or —CH_2M, in which Z is lower alkyl and

M is hydroxyl, halogen, cyano, or a group of the formula —O—SO_2—R^2 in which R^2 is lower alkyl or tolyl.

4,435,323
VINYLACETYLENE-TERMINATED POLYMIDE DERIVATIVES

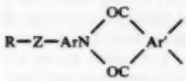
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by Daniel L. Curry, Vice-President of St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

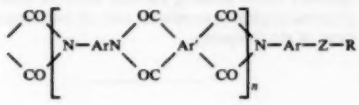
Continuation-in-part of Ser. No. 199,616, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,871

Int. Cl.³ C07D *209/34, 471/00;* **C08F** *22/40*

U.S. Cl. 548—473 **27 Claims**

1. A polyimide of the formula:





wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms of said aromatic radical and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except that in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

n is an integer having a value of one to 20;

R is hydrogen or an organic moiety containing one to 21 carbon atoms; and

Z is the structure —CH=CH—C≡C— or —C≡C—CH=CH—.

4,435,324
PROCESS FOR THE PREPARATION OF 1-ALKYLAMINOANTHRAQUINONES

Karl-Julius Reubke, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,692

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115548

Int. Cl.³ C07C *97/24*

U.S. Cl. 260—378 **8 Claims**

1. In the process for the preparation of 1-alkylaminoanthraquinones, wherein 1-nitroanthraquinones are aminolysed with alkylamines at elevated temperature in water and organic water-immiscible solvents, in the presence of acid-binding agents, the improvement comprising using calcium hydroxide as the acid-binding agent.

4,435,325
1α,25α-DIHYDROXY-CHOLECALCIFEROL AND METHODS FOR THE PRODUCTION THEREOF

Jean Jolly, Fontenay-sous-Bois; Primo Rizzi, Villemomble, and Jean Taillardat, Domont, all of France, assignors to Roussel Uclaf, Paris, France

Filed May 5, 1980, Ser. No. 146,497

Claims priority, application France, May 23, 1979, 79 13118

Int. Cl.³ C07J *71/00, 5/00*

U.S. Cl. 260—397.2 **4 Claims**

1. A process for the preparation of the product of claim 1 comprising dissolving a chloroform solvate of 1α,25-dihydroxy-cholecaliferol in an organic solvent to effect desolvation and adding water to the solution to crystallize the monohydrate.

4,435,326
INTERMEDIATES USEFUL IN THE PREPARATION OF 17,17-BIS(SUBSTITUTED THIO)ANDROSTENES

Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

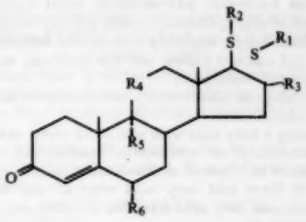
Filed Sep. 9, 1982, Ser. No. 416,181

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.3 **6 Claims**

1. A steroid having the formula



or the 1,2-dehydro derivative thereof wherein

R_1 is hydrogen;

R_2 is alkyl, cycloalkyl, aryl, arylalkyl, alkylthioalkyl, alkoxyalkyl, alkanoyloxyalkyl, aroyloxyalkyl, alkoxycarbonylalkyl, carboxyalkyl, or arylalkyl;

R_3 is hydrogen, hydroxy, alkoxy, aryloxy, oxo, methylene, alkylthio, arylthio, alkanoyl, alkanoyloxy, or halogen;

R_4 is carbonyl, β-hydroxymethylene or β-acetyloxymethylene;

R_5 is hydrogen or halogen; and

R_6 is hydrogen, methyl, hydroxy, alkanoyl or halogen.

4,435,327
3β,7β,15α-TRIHYDROXY-5-ANDROSTEN-17-ONE, ITS 3,15-DIPIVALATE, AND THEIR PREPARATION

Karl Petzoldt; Henry Laurent, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,674

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137919

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.5 **14 Claims**

1. A process for preparing 3β,7β,15α-trihydroxy-5-androsten-17-one, comprising acidifying 3β,7β,15α-trihydroxy-5-androsten-17-one with a dilute mineral acid or dilute strong organic acid in the presence of a ketone, and, then, reacting the resultant product with and organic base.

12. 3β,7β,15α-Trihydroxy-5-androsten-17-one.

14. In a process for preparing 6β,7β;15β,16β-dimethylene-3-oxo-17α-pregn-4-ene-21,17-carbolactone from 7β-hydroxy-15β,16β-methylene-3β-pivaloyloxy-5-androsten-17-one, the improvement wherein the latter compound is prepared by,

carrying out the process of claim 7 in order to prepare the 3,15-dipivalate of 3β,7β,15α-trihydroxy-5-androsten-17-one, and

methylenating the 15β,16β-position in the resultant compound to form 7β-hydroxy-15β,16β-methylene-3β-pivaloyloxy-5-androsten-17-one.

4,435,328
PREPARATION AND USE OF ALKALI METAL ISETHIONATES FROM ETHIONIC ACID

Vincent Lamberti, Upper Saddle River, and Wilder F. Pease, Norwood, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 270,318, Jun. 4, 1981, Pat. No. 4,369,144. This application Sep. 27, 1982, Ser. No. 423,912
Int. Cl.³ C07C *143/90*
U.S. Cl. 260—400 **9 Claims**

1. A process for the preparation of a fatty acid ester of an alkali metal isethionate wherein said isethionate is prepared from ethionic acid, comprising the steps of:

(a) heating an aqueous solution containing about 20% to about 50% of ethionic acid at a temperature of about 80° C. to about 160° C. for a sufficient time to produce a solution of isethionic acid and sulfuric acid;

(b) neutralizing said aqueous solution with a mixture of calcium hydroxide and an alkali metal hydroxide, the amount of said hydroxides in said mixture being sufficient to substantially completely convert the sulfuric acid into hydrated calcium sulfate and the isethionic acid into an alkali metal isethionate;

(c) separating the alkali metal isethionate from said neutralized solution; and

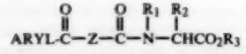
(d) reacting a fatty acid with said alkali metal isethionate in the presence of an esterification catalyst and a sufficient amount of an alkali or an alkali metal salt of a carboxylic acid to form said fatty acid ester of said isethionate, wherein said fatty acid ester has a yellowness index less than about 10.

4,435,329
SUBSTITUTED N-(ω-AROYLPROPIONYL) DERIVATIVES OF α-AMINO ACIDS AND ESTERS THEREOF

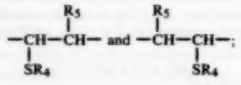
Francis J. McEvoy, Pearl River, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 16, 1981, Ser. No. 312,119
Int. Cl.³ C07C *149/40, 149/43, 153/023*
U.S. Cl. 260—455 R **21 Claims**

1. Compounds represented by the formula



wherein Z is a divalent moiety selected from the class consisting essentially of



R_1 is selected from the class consisting essentially of hydrogen and lower alkyl having from 1 to 4 carbon atoms but excluding tertiary butyl; R_2 is selected from the class consisting essentially of hydrogen, lower alkyl having from 1 to 4 carbon atoms but excluding tertiary butyl; hydroxy—R_8—, lower alkyl—R_8—, mercapto—R_8—, cyclohexyl, cyclopentyl, phenyl, phenyl—R_8—, carboxy—R_8—, amino—R_8— and carbamoyl—R_8—, wherein R_8— is a divalent straight chain parafinic moiety having 1 to 6 carbon atoms; R_3 is selected from the class consisting essentially of hydrogen and lower alkyl having from 1 to 4 carbon atoms; R_4 is selected from the class consisting essentially of hydrogen, lower alkanoyl, benzoyl and phenyl-substituted-lower alkanoyl; R_5 is selected from the class consisting essentially of hydrogen and a lower alkyl having from 1 to 4 carbon atoms but excluding tertiary butyl; ARYL is selected from the class consisting essentially of 1-naphthyl, 2-naphthyl, 4-chloro-1-naphthyl, 4-methoxy-1-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, 5,6,7,8-tetrahydro-2-naphthyl, 4-biphenylyl, 5-indanyl, 4-indanyl, phenyl, and substituted phenyl moieties having the formula

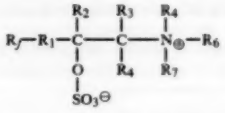
wherein R_6 is selected from the class consisting essentially of fluoro, chloro, bromo, trifluoromethyl, cyano, phenoxy, halophenoxy, phenylthio, halophenylthio, lower alkyl having from 1 to 4 carbon atoms, and lower alkoxy having from 1 to 4 carbon atoms, and R_7 is selected from the group consisting of chloro, fluoro, bromo, lower alkyl having from 1 to 4 carbon atoms and lower alkoxy having from 1 to 4 carbon atoms; and where m is an integer of zero, one or two; including individual optically active isomers; racemic mixtures thereof; non-toxic pharmacologically-acceptable salts of the foregoing; and mixtures of the foregoing.

4,435,330
PERFLUOROALKYL-ALKYLENE BRANCHED AMPHOTERIC SULFATO BETAINES

Robert A. Falk, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 29, 1982, Ser. No. 457,609
Int. Cl.³ C07C *141/00, 141/02*
U.S. Cl. 260—458 F **6 Claims**

1. A compound of the formula



(I)

wherein

R_f is straight or branched chain perfluoroalkyl of 3 to 18 carbon atoms, or perfluoroalkoxyperfluoroalkyl of 3 to 18 carbon atoms;

R_1 is a direct bond, alkylene of up to 6 carbon atoms, alkyleneoxyalkylene of up to 6 carbon atoms, alkylenethioalkylene of up to 6 carbon atoms, alkyleneoxy of up to 6 carbon atoms, alkenyleneoxyalkylene of up to 6 carbon atoms, alkylenethioalkyleneoxyalkylene of up to 9 carbon atoms, carbonamidoalkylene wherein the alkylene moiety contains up to 6 carbon atoms and the amido nitrogen is further unsubstituted or substituted by lower alkyl, sulfonamidoalkylene wherein the alkylene moiety contains up to 6 carbon atoms and the amido nitrogen is further unsubstituted or substituted by lower alkyl, caronamidoalkylenethioalkylene wherein the carbonamidoalkylene moiety is as defined hereinabove and the thioalkylene moiety contains up to 6 carbon atoms, or sulfonamidoalkylenethioalkylene wherein the sulfonamidoalkylene moiety is as defined hereinabove and the thioalkylene moiety contains up to 6 carbon atoms;

R_2, R_3 and R_4 are independently hydrogen or lower alkyl;

R_5, R_6 and R_7 are independently lower alkyl, and may additionally represent aralkyl, and R_6 and R_7 taken together with the nitrogen to which they are attached may also represent piperidino or morpholino, or R_5, R_6 and R_7 taken together with the nitrogen to which they are attached represent pyridyl, acridyl or quinolyl, and salts thereof.

4,435,331

METHYL CARBONATE OF α,3,3-TRIMETHYL CYCLOHEXANE METHANOL, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

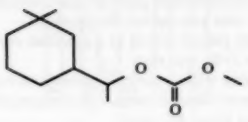
Michael Licciardello, Little Silver, and Richard M. Boden, Ocean, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 10, 1983, Ser. No. 474,158

Int. Cl.³ C07C *69/96*

U.S. Cl. 260—463 **1 Claim**

1. The methyl carbonate of α,3,3-trimethyl cyclohexane methanol having the structure:



4,435,332

M-PHENOXYBENZAMIDE DERIVATIVES

Hiroshi Noguchi, Toyonaka; Shunichi Hashimoto, Takarazuka; Shigeyoshi Kitamura, Toyonaka; Takashi Matsuo, Iruma; Akihiko Mine, Kawanishi, and Katsuzo Kamoshita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

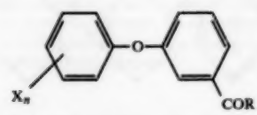
Division of Ser. No. 44,249, May 31, 1979, Pat. No. 4,263,039, which is a division of Ser. No. 792,221, Apr. 29, 1977, Pat. No. 4,173,464. This application Dec. 5, 1980, Ser. No. 213,637

Claims priority, application Japan, May 7, 1976, 51-52430; May 13, 1976, 51-54989; Jun. 10, 1976, 51-120754; Dec. 28, 1976, 51-160388

Int. Cl.³ C07C *103/76*

U.S. Cl. 260—465 D **4 Claims**

1. A m-phenoxybenzamide compound of the formula:



wherein X, which may be the same or different, is a halogen atom or a lower alkyl or lower alkoxy group, n is zero or an integer of 1 to 5 and R is a group of the formula:

wherein R_1' is a hydrogen atom or a lower alkyl group and R_2' is a lower cyanoalkyl or benzyl group.

4,435,333

ACETONITRILE SOLVATE OF AN α-AMINOACYL CHLORIDE HYDROCHLORIDE

Rodolfo Maggi; Gian P. Maggi, both of Milan, and Giuliano Marcon, Bulciago, all of Italy, assignors to Chimica Bulciago S.r.l., Bulciago, Italy

Division of Ser. No. 261,516, May 7, 1981, Pat. No. 4,369,146, which is a continuation of Ser. No. 120,357, Feb. 11, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 401,357

Claims priority, application Italy, May 3, 1979, 22323 A/79

Int. Cl.³ C07C *121/80*

U.S. Cl. 260—465 D **1 Claim**

1. The hemisolvate consisting of the acetonitrile hemisolvate of D(−)2-(p-hydroxyphenyl)glycyl chloride hydrochloride.

4,435,334

NAPHTHOLSULPHONIC ACID COMPOUNDS, THEIR PREPARATION AND USE AS COUPLING COMPONENTS

Frank-Michael Stöhr, Burscheid; Peter Wild, Alten-Buseck, and Horst Nickel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

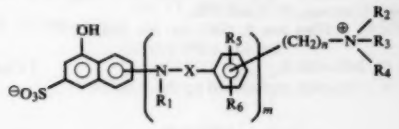
Filed Dec. 28, 1981, Ser. No. 334,613

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3100978

Int. Cl.³ C07C *143/38, 143/53*

U.S. Cl. 260—501.12 **4 Claims**

1. A naphtholsulphonic acid substituted with an ammonium group and, in the betaine form, corresponding to the formula



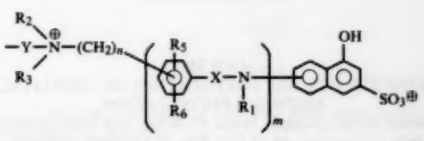
wherein

X is —CO— or —SO_2—,

R_1 is hydrogen or alkyl,

R_2 and R_3 each independently is alkyl, alkenyl or phenylalkyl,

R_4 is alkyl, alkenyl, phenylalkyl or



Y is alkylene or xylylene,

m is 1 or 2,

n is 0 or 1,

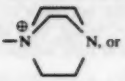
R_5 and R_6 each independently is hydrogen, alkyl, alkoxy or halogen,

and in addition, if n = 1,

R_2 or R_4 may be amino, alkylamino, dialkylamino, cycloalkyl, phenyl, or phenyl substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or cyano,

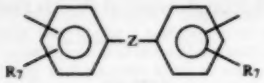
R_2 and R_3, together with the nitrogen atom to which they are bonded may form optionally C_1-C_4-alkyl-substituted pyrrolidine, piperidine, morpholine, piperazine or N-hydroxyethyl-piperazine,

R_2, R_3 and R_4, together with the nitrogen atom to which they are bonded may form a pyridinium ring, or a group of the formula



R_2, R_3 and R_4 may be hydrogen,

Y is phenylene, which is optionally substituted by hydroxyl, halogen, cyano, C_1-$_4$-alkyl or C_1-C_4-alkoxy, benzylene or a radical of the formula



Z is a direct bond, $-(CH_2)_p-$, $-O-$, $-O-(CH_2)_p-O$, $-SO_2-$, $-NHCO-$, $-NHCONH-$, $-NHCO-(CH_2)_p-CONH-$ or $-CONH-(CH_2)_p-NHCO-$,

p is 1, 2 or 3, and

R_7 is hydrogen, alkyl, alkoxy or halogen.

4,435,335

SUBSTITUTED-BUTANEDIPEROXOIC ACIDS AND PROCESS FOR BLEACHING

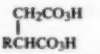
James M. Mayer, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 4, 1982, Ser. No. 336,542

Int. Cl.³ C07C *179/10*

U.S. Cl. 260—502 R **7 Claims**

1. A compound represented by the formula:



wherein

R is alkyl of 6 to 18 carbon atoms or phenyl.

4,435,336

PROCESS FOR THE PREPARATION OF AROMATIC AMINOSULPHONIC ACIDS

Herbert Emde, Cologne; Heinz U. Blank, and Peter Schnegg, both of Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 364,082

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114829

Int. Cl.³ C07C *143/58, 143/60*

U.S. Cl. 260—508 **17 Claims**

1. In a process for the preparation of an aminoarylsulphonic acid by heating a reaction mixture comprising an arylamine and sulphuric acid or an arylammonium hydrogen sulphate by the baking process, the improvement which comprises carrying out the process under pressure at a temperature of at least 140° C. and, at least partially, in the presence of water, sulphuric acid where present being present in an amount of 0.5 to 1.1 mols per mol of arylamine, said water being present in the reaction mixture in an amount of 0.02 to 2 mols per mol of arylamine or arylammonium hydrogen sulphate originally introduced into the reaction mixture.

4,435,337

PROCESS FOR EXTRACTING RUBBER AND BY-PRODUCTS FROM GUAYULE AND GUAYULE-LIKE SHRUBS

Edward L. Kay, Akron, and Richard Gutierrez, Canal Fulton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 263,387, May 13, 1981, abandoned, and Ser. No. 149,862, May 14, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 298,447

Int. Cl.³ C08C *4/00*

U.S. Cl. 528—493 **7 Claims**

1. A process for isolating rubber, resins, water-solubles, and bagasse from comminuted guayule and guayule-like fibrous plant material which comprises the steps of:

(a) drying the plant material to a moisture content of about 5 to about 25%; and then

(b) deresinating with essentially anhydrous oxygenated organic solvent which is resin miscella comprising acetone and at least about 4% resin;

(c) recovering rubber, water-solubles and by-product bagasse by water flotation.

4,435,338

DITHIOPHOSPHATES

Klaus-Peter Michaelis, Lindenfels, and Rainer Schneider, Zwingenberg, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 21, 1981, Ser. No. 303,748

Claims priority, application Switzerland, Sep. 29, 1980, 7277/80

Int. Cl.³ C07F *9/17*

U.S. Cl. 260—929 **4 Claims**

1. A compound of the formula

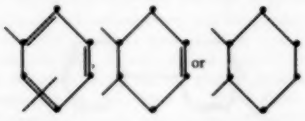
(I)

in which

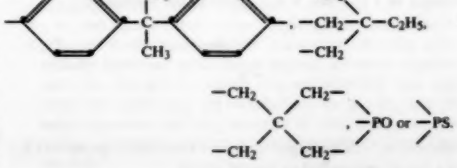
n is 2, 3 or 4 and is the valency of Q,

R is a hydrocarbon radical having 1 to 22 carbon atoms, or said radical having an —O— or —S— group in the chain, or said radical substituted by hydroxy or by halogen,

A is the group —OCO— and Q is a group



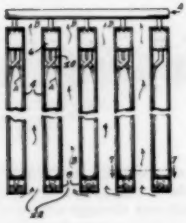
or A is the group —O— and Q is one of the radicals



4,435,339
FALLING FILM HEAT EXCHANGER

Loren G. Kragh, Federal Way, Wash., assignor to Tower Systems, Inc., Tacoma, Wash.

Filed Aug. 6, 1979, Ser. No. 63,797
Int. Cl.³ B01F 3/04
U.S. Cl. 261—153 5 Claims



1. A falling film heat exchanger for establishing thermal contact between two fluids of different temperatures comprising:

a plurality of spaced apart and juxtaposed cells each having: substantially vertically disposed parallel side walls; and first fluid collector means disposed at the bottom of the side walls along the length thereof;

first fluid distributing means disposed at the top of the cell side walls along the length thereof for dispensing a first fluid in a substantially uniform film over the inside of each of the cell side walls;

second fluid distributing means disposed above the interspace between each of said cells along the length thereof for dispensing a second fluid in a substantially uniform film over the outside and confronting side wall surfaces of two juxtaposed cells; and

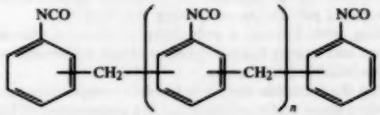
second fluid collector means disposed beneath the said interspaces for collecting the said second fluid.

4,435,340
PROCESS FOR PREPARING MICROCAPSULES FOR PRESSURE SENSITIVE MANIFOLD PAPER

Tetsuro Horiike; Takio Kuroda, both of Sakai, and Tomoharu Shiozaki, Amagasaki, all of Japan, assignors to Kanzaki Paper Manufacturing Company Limited, Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,972
Claims priority, application Japan, Jan. 27, 1981, 56-11374; Jun. 30, 1981, 56-102518
Int. Cl.³ B01J 13/02
U.S. Cl. 264—4.7 5 Claims

1. A process for preparing microcapsules for pressure sensitive manifold paper characterized by emulsifying in a hydrophilic liquid a hydrophobic liquid containing an aromatic isocyanate repesented by the formula



(I)

wherein n is an integer of 1 to 10, an aliphatic isocyanate and an electron donated organic chromogenic material, and forming a polymer at the interface to cover hydrophobic liquid droplets with the polymer, the aromatic isocyanate and the aliphatic isocyanate being used in the ratio of 1:0.05–20 by weight.

4,435,341
METHOD OF MANUFACTURING AMMONIUM SULFATE GRANULES

Horst Bechthold, Erftstadt-Friesheim, Fed. Rep. of Germany, assignor to Buckau-Walther AG, Grevenbroich, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,533
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108986
Int. Cl.³ B01J 2/00
U.S. Cl. 264—7 5 Claims

1. A method of manufacturing ammonium sulfate granules, having useful properties of increased resistance to applied pressure and abrasion, comprising

(a) spraying a solution of ammonium sulfate to form it into finely divided droplets,

(b) drying said droplets to form fine particles of ammonium sulfate,

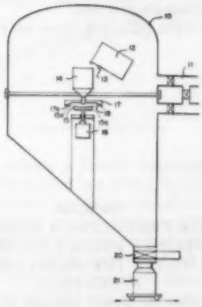
(c) spraying onto said fine particles an aqueous solution containing 30–50% ammonium sulfate, and

(d) drying said particles to form ammonium sulfate granules having improved resistance to pressure and abrasion.

4,435,342
METHODS FOR PRODUCING VERY FINE PARTICLE SIZE METAL POWDERS

Jospeh M. Wentzell, Ty Careg, Remsen, N.Y. 13438

Filed Nov. 4, 1981, Ser. No. 318,261
Int. Cl.³ B01J 2/02
U.S. Cl. 264—8 12 Claims



1. A method of producing ultra fine solid metal particles comprising the steps of:

(a) discharging droplets of molten metal from a rotating primary member having a substantially circular periphery in a generally radial path from said rotating member tangentially against a spaced secondary annular planar surface surrounding and spaced from the periphery of the rotating primary member, said annular planar surface being inclined to the path of the droplets of molten metal from the rotating member at an angle such that the droplets are free from any tendency for the metal to stick to said annular planar surface and such that the molten droplets are further atomized into finer droplets which continue tangentially beyond said secondary annular surface into a cooling environment;

(b) cooling said finer droplets in said cooling environment to solidify the droplets to solid particles; and

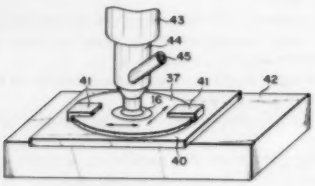
(c) collecting said cooled particles as ultra fine solid metal particles.

4,435,343

METHOD FOR MANUFACTURING AN INFORMATION MEMORY DISK

Hideo Ando, and Isao Suzuki, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 9, 1982, Ser. No. 396,594
Claims priority, application Japan, Jul. 20, 1981, 56-113244
Int. Cl.³ B29D 17/00
U.S. Cl. 264—22 12 Claims



1. A method for manufacturing an information memory disk comprising the steps of:

(a) preparing a die having one surface on which are formed an annular first rugged pattern corresponding to tracks, and an annular second rugged pattern corresponding to a positioning mark and concentrically located against the tracks;

(b) manufacturing by the use of the die a blank having one surface on which are formed an annular rugged track corresponding to the first rugged pattern and an annular rugged positioning mark corresponding to the second rugged pattern;

(c) detecting the position of the center of the blank on the basis of the positioning mark;

(d) boring a hole through the blank centered upon the center of the positioning mark; and

(d) forming a light reflecting layer on the annular rugged track.

4,435,344

METHOD FOR PRODUCING A HEAT-INSULATING PAPER CONTAINER FROM A PAPER COATED OR LAMINATED WITH A THERMOPLASTIC SYNTHETIC RESIN FILM

Akira Iioka, Inzaimachi, Japan, assignor to Nihon Dixie Company, Limited, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,346
Claims priority, application Japan, Dec. 29, 1980, 55-187575
Int. Cl.³ B29D 27/00
U.S. Cl. 264—45.1 11 Claims

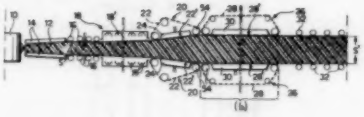
1. A method for producing an insulating composite paper container which comprises heating a fabricated container having a container body member and a bottom panel member wherein the container body member is formed of paper coated or laminated with a thermoplastic synthetic resin film on one surface thereof and coated or laminated with the same or different thermoplastic synthetic resin film or aluminum foil on the other surface thereof, wherein the bottom panel member is formed of paper which may or may not be coated or laminated with a thermoplastic synthetic resin film or aluminum foil and wherein the paper has a moisture content of at least about 2% and wherein the heating is performed at a temperature and for a time sufficient to form a heat-insulating layer on at least one surface of the container body member by a foaming action on at least one of the thermoplastic resin films of the container body member through the action of the moisture in the paper of the container body member.

4,435,345

PROCESS FOR THE PRODUCTION OF A CONTINUOUS SHEET OF FOAMED SYNTHETIC, THERMOPLASTIC POLYMER BY EXTRUSION

Roberto Colombo, Turin, Italy, assignor to Lavorazione Materie Plastiche L.M.P. S.p.A., Turin, Italy

Filed Oct. 29, 1981, Ser. No. 316,383
Claims priority, application Italy, Nov. 5, 1980, 68689 A/80
Int. Cl.³ B29D 27/00
U.S. Cl. 264—53 4 Claims



1. In a process of producing a continuous sheet of foamed synthetic thermoplastic polymer comprising extruding a foamable melt of the polymer through a slit and guiding the sheet during foaming with the opposite faces thereof in contact with respective cold surfaces thereby to cool said faces to below the gelling point of the polymer, the improvement further comprising the steps of:

(a) passing the so foamed sheet through a heating zone before the temperature at the core of the sheet has fallen substantially below the incipient softening point of the polymer, thereby to raise the temperature of the sheet to a value which is at least substantially constant throughout the thickness of the sheet and is between said incipient softening point and the critical viscosity point of the polymer,

(b) applying sub-atmospheric pressure to the opposite faces of the sheet exiting from said heating zone of step (a), through a pair of mutually diverging moving walls which are permeable to gas while advancing said walls in synchronism with the sheet thereby to temporarily adhere the said faces of the sheet to the respective walls and progressively increase the thickness of the sheet during its advance,

(c) continuing to apply sub-atmospheric pressure to the opposite faces of the sheet exiting from step (b) through a pair of mutually parallel moving walls which are permeable to gas and are advanced in synchronism with the sheet while cooling the sheet, thereby to keep the faces of the sheet adhering to the respective walls and maintaining the thickness of the sheet constant until the foam is consolidated.

4,435,346

METHOD OF PRODUCING OPEN-CELL FOAMED ARTICLES OF CROSS-LINKED POLYOLEFINS

Hiroo Ito; Takeo Kasanami, both of Joyo, and Shuji Miura, Uji, all of Japan, assignors to Sanwa Kako Company, Limited, Kyoto, Japan

Filed Mar. 12, 1982, Ser. No. 357,682
Claims priority, application Japan, May 22, 1981, 56-76700
Int. Cl.³ B29D 27/00
U.S. Cl. 264—54 13 Claims

1. A method for the production of open-cell foamed articles of cross-linked polyolefins comprising the steps of:

blending with heating a polyolefin, a chemical blowing agent and a cross-linking agent to obtain a foamable and cross-linkable composition,

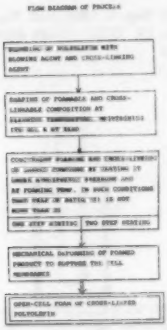
forming the foamable and cross-linkable composition into a desired shape under pressure and at a temperature of from 115° to 155° C. and which is lower than the foaming temperature of said composition while maintaining its gel percent at zero,

heating the shaped composition at a suitable foaming temperature under atmospheric pressure to decompose the cross-linking agent and the blowing agent concurrently, the peak of the ratio of the degree of cross-linking to the degree of decomposition of the blowing agent being not

more than 20, thereby giving rise to a foamed product of cross-linked polyolefin having cells enclosed with very thin membranes capable of being easily ruptured by the action of mechanical force, and

mechanically deforming said foamed product to cause the membranes of the cells to rupture;

wherein the gel percent is the ratio of the foamable and cross-linkable composition after extraction to that before



extraction, the extraction being carried out under reflux of trichloroethylene as a solvent for 24 hours by means of a soxhlet extractor using a glass filter of from 40 to 50μ; the degree of cross-linking is the gel percent of the composition at a given heating time and the degree of decomposition of the blowing agent is the ratio of the degree of expansion at said given heating time to the final degree of expansion of the foamed composition.

4,435,347

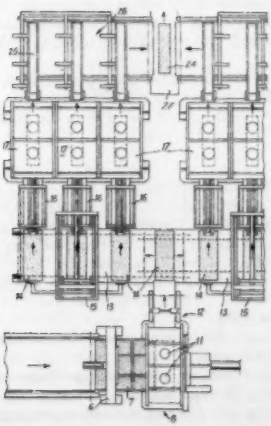
PROCESS FOR THE PRODUCTION OF MOLDED MEMBERS FROM ELONGATED PARTICLES OF WOOD

Pierre Sorbier, Pernes-les-Fontaines, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Continuation of Ser. No. 52,266, Jun. 26, 1979, abandoned. This application Jun. 16, 1981, Ser. No. 274,267

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—118 **10 Claims**



1. A process for producing, from binder-coated wood particles, a one piece molded article having a base, and at least one side wall as a continuation of said base, but extending at an angle relative to said base, comprising:

forming a layer of binder coated wood particles into a generally flat section,

having a first portion to be the base of said article, and at least one other portion to be at least one side wall of said article,

precompressing said side wall portion to a thickness less than the thickness of said base portion, then bending said side wall portion at the junction of said base portion and said side wall portion of said section to form an angle with said base portion,

placing the bent section into a mold,

compressing and heating said bent section in said mold to mold said section, and to bond said coated wood particles to form said molded article, and

opening said mold, and removed said molded article.

4,435,348

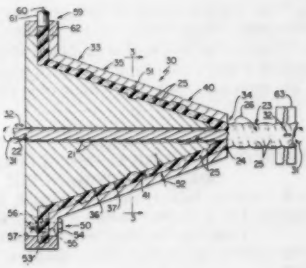
APPARATUS AND METHOD FOR MAKING FLEXIBLE LOAD-CARRYING CORD

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 244,530, Mar. 17, 1981, Pat. No. 4,355,069. This application Sep. 20, 1982, Ser. No. 419,862

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—174 **16 Claims**



1. In a method for making a flexible load-carrying cord which is adapted to be embedded in a polymeric product; said method comprising the steps of twisting a plurality of elements in one direction and wherein said elements normally have a tendency to untwist; and moving said twisted elements in a rectilinear path; the improvement in said method comprising the steps of, forming a flowable polymeric matrix material which has a plurality of discrete randomly arranged fibers embedded therein to define a polymeric sleeve having said fibers disposed in a helical pattern which extends in a direction opposite from said one direction, and bonding said sleeve concentrically around and against said elements during said moving step so that upon curing said sleeve said fibers serve to substantially eliminate said tendency of said elements to untwist.

4,435,349

METHOD FOR MAKING A REINFORCED RIM ELASTOMER

Richard J. G. Dominquez, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,750

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ B29C *5/00, 3/02*

U.S. Cl. 264—257 **6 Claims**

1. A method for making a high strength composite comprising a reinforcing mat impregnated with reaction injection molded polyurethane elastomer resin, the method comprising

placing a reinforcing mat in a mold cavity and injecting into the mold cavity a polyol of about 5500 molecular weight based on a trihydric initiator, ethylene glycol, a stannic diester of a thiol acid and a polyisocyanate.

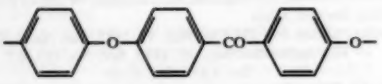
4,435,350

METHOD FOR THE ORIENTATION OF THERMOPLASTIC POLYETHER ETHER KETONE FILMS

Nobuo Fukushima; Teruo Saitou, both of Shiga, and Haruo Hayashida, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Feb. 18, 1982, Ser. No. 349,940
Claims priority, application Japan, Feb. 19, 1981, 56-23706
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—280 **1 Claim**

1. A method for the orientation of a film or sheet consisting essentially of a crystalline thermoplastic polyether ether ketone containing therein a repeating unit represented by the formula:



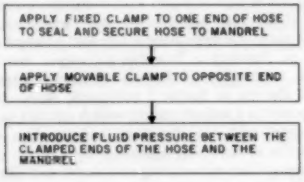
singly or in combination with one or more different repeating units, which comprises rolling the film or sheet of crystalline thermoplastic polyether ether ketone at a linear pressure of at least 100 kg/cm by the use of at least one pair of pressure rolls maintained within a temperature range of from 80° C. to 320° C. while applying a backward tension of at least 80 kg/cm^2.

4,435,351

METHOD OF BREAKING LOOSE VULCANIZED HOSE FROM A RIGID MANDREL

Brian J. Gilmore, Belfast, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 16, 1982, Ser. No. 418,917
Claims priority, application United Kingdom, Mar. 18, 1982, 8207869
Int. Cl.³ B29C *7/00*; B29H *7/14*
U.S. Cl. 264—335 **3 Claims**


APPLY FIXED CLAMP TO ONE END OF HOSE TO SEAL AND SECURE HOSE TO MANDREL
APPLY MOVABLE CLAMP TO OPPOSITE END OF HOSE
INTRODUCE FLUID PRESSURE BETWEEN THE CLAMPED ENDS OF THE HOSE AND THE MANDREL

1. A method of breaking loose a vulcanized hose having first and second ends from a rigid mandrel on which the hose has been vulcanized comprising:

(a) applying a fixed clamp to the first end of the hose so as to prevent movement of said first end relative to the mandrel and to form a fluid-tight seal of said first end relative to the mandrel;

(b) applying a movable clamp to the second end of the hose less securely than said fixed clamp so as to permit movement of said second hose end relative to the mandrel but restrict the passage of fluid between said second end of the hose and the mandrel; and

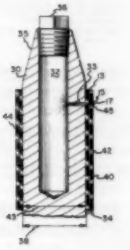
(c) introducing fluid pressure between the hose and the mandrel thereby causing the hose to increase in diameter and shorten in length by movement of its second end toward its first end.

4,435,352

METHOD FOR MAKING A HOSE HAVING AN INDEX MARK

Roy W. Olsen, and Curtis H. Bell, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 4, 1981, Ser. No. 299,286
Int. Cl.³ B29C *17/08*; B29H *3/06*
U.S. Cl. 264—504 **4 Claims**



1. A method of manufacturing elastomeric hose having an index mark at or adjacent the end of the hose comprising the following sequence of steps:

(a) providing a mandrel including:

(i) a portion having an exterior hose-bearing surface which is cylindrical, and

(ii) an interior cavity that is in communication with said exterior surface of the mandrel via a hole in said portion at a location corresponding in location to that of the index mark to be formed on the hose;

(b) placing a sleeve having a wall of uncured elastomer material on the mandrel, the sleeve having an inside diameter corresponding approximately to the outside diameter of the mandrel, the sleeve covering the hole in the mandrel, the size of the hole being selected to permit forcing of uncured elastomer material through the hole by fluid pressure;

(c) subjecting the sleeve while mounted on the mandrel to a fluid pressure differential to form a portion of the elastomer material of the sleeve wall through the hole and into the cavity of the mandrel and thereby form a hole in the sleeve wall corresponding in location to that of the mandrel;

(d) curing the sleeve having a hole through its wall into a hose having a hole through its wall; and

(e) removing the cured sleeve from the mandrel.

4,435,353

PROCESSES FOR FORMING BUILDING MATERIALS COMPRISING NON-WOVEN WEBS

John S. Forry, Manor Township, Lancaster County, and John R. Garrick, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

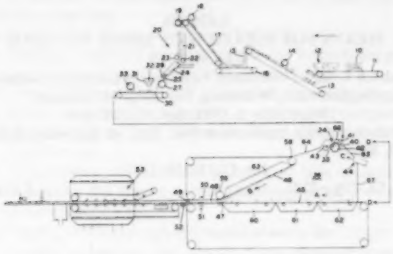
Filed Aug. 16, 1982, Ser. No. 408,060
Int. Cl.³ B29C *5/00*
U.S. Cl. 264—518 **20 Claims**

1. A process for forming a non-woven web, said process comprising the steps of

preparing a mixture comprising a binder and principally inorganic fibrous material;

introducing said mixture into the upper regions of a mat-forming zone comprising a first moveable foraminous wire disposed in the lower region thereof and, optionally, a second moveable foraminous wire disposed so as to

converge with said first foraminous wire at a nip opening disposed therebetween, said mixture being introduced through a first aperture such that it falls into and is entrained in a horizontally or upwardly directed air stream which is introduced through a second aperture into said mat-forming zone, said second aperture having means associated therewith for controlling the direction of the air which passes therethrough;



adjustably exhausting the entraining air through said wire or wires to selectively deposit said mixture thereupon, said second aperture and said optional second foraminous wire being disposed relative to said first foraminous wire such that the mixture which is deposited on said wire or wires is deposited essentially uniformly;

consolidating said deposited mixture to yield a non-woven web of material; and

compressing and curing said material.

4,435,354

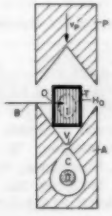
METHOD FOR THE RELEASE OF THERMONUCLEAR ENERGY COMBINING IMPACT, MAGNETIC AND INERTIAL CONFINEMENT FUSION

F. Winterberg, 5395 Goldenrod Dr., Reno, Nev. 89511

Filed Oct. 14, 1980, Ser. No. 196,928

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—108 **5 Claims**



1. A method for the release of nuclear energy comprising:

(a) at least one means accelerating a mass weighing at least one hectogram to at least 10 km/sec,

(b) directing the mass to impact a target structure comprising a body having a cavity therein, an indentation adjacent the cavity, a sealed target chamber containing a first amount of fusion fuel therein positioned in the indentation and the cavity containing a second amount of fusion fuel,

(c) creating a multi-kilogauss field about said target chamber whereby upon impact of the mass upon the target chamber a magnetized plasma is created which in turn creates a plasma in the cavity by ablatively driven implosion from either black body radiation or shock waves from the magnetized plasma.

4,435,355

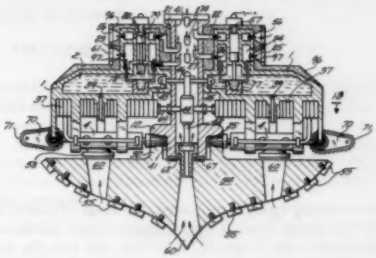
POWER WHEEL WITH DOUBLE ACTION VALVE IN CONJUNCTION WITH A DRILL BIT

Friederich Weinert, 219-19 131st Ave., Jamaica, N.Y. 11413

Continuation-in-part of Ser. No. 182,104, Aug. 28, 1980, Pat. No. 4,340,970. This application Aug. 4, 1982, Ser. No. 405,310

Int. Cl.³ G21C *00/00*

U.S. Cl. 376—208 **13 Claims**



1. A power wheel with double action valves comprising a vertical axis mounted on a frame means shaft having first and second ends, said both ends fixed to a side gear whereby both gears confronting each other and connecting each other by a plurality of pinion gears intermeshing with both side gears,

a wheel fixedly mounted between the first and second end of said shaft, said wheel having an outer perimeter,

a plurality of expansion valves mounted on said outer perimeter on radial axis,

each of said expansion valves including a hollow T shaped piston,

a pressurized fluid, a pair of push rods connecting:

A. a pair of valve control bars,

B. a pair of duplex inlet and outlet valves,

C. a pinion gear intermeshing with said stationary side gear and a satellite gear,

D. a drive gear for delivering useful work output wherein a plurality of expansion valves are activated,

E. said pressurized fluid supplied from

F. a fluid vessel through valve controls separating high pressurized fluid from low pressurized fluid whereby relaxed fluid is channeled through

G. a radiator via a hollow shaft,

H. said Shaft containing an interior pressure pump extracting relaxed fluid out of said radiator to be pumped back into a pressure cell,

I. said Pressure cell including

J. a plurality of heating elements, heat elements selected to be conventional or nuclear and said satellite gear mounted in center of a drill bit,

K. said drill bit consisting of a solid tapered disc with a plurality of exchangeable cutting edges.

4,435,356

METHOD AND AN APPARATUS FOR MONITORING THE PERIOD OF A NUCLEAR REACTOR

Lars O. Johansson, Nyköping, Sweden, assignor to Studsvik Energiteknik AB, Nyköping, Sweden

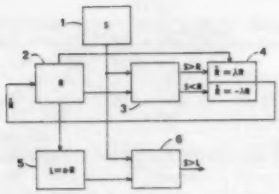
Continuation of Ser. No. 17,267, Mar. 5, 1979, abandoned. This application May 8, 1981, Ser. No. 261,696

Int. Cl.³ G21C *7/36*

U.S. Cl. 376—216 **2 Claims**

1. A method of monitoring the period of a nuclear reactor, wherein a power signal representing the power of the reactor is measured and is continuously compared with a reference signal, and a warning signal is generated in response to the result of said comparison, characterized in that when a difference between the power signal and the reference signal is detected, the value of the reference signal is multiplied by a

fixed constant, the polarity of which is dependent upon the difference between the power signal and the reference signal to reduce said difference, whereby the multiplied reference signal is fed back to generate a new reference signal describing an exponential function of the time to be compared with the power signal, that the reference signal is brought to follow the power signal as long as the latter does not change faster than a predetermined rate of change for the reference signal, that at



least one warning signal is generated, the value of which being equal to the instant level of the reference signal multiplied by a predetermined factor greater than one, and that the power signal is compared also with this warning signal, said warning signal being generated when the value of the power signal becomes equal to or exceeds the value of said warning signal to provide a short response time to a rapid increase of the power signal.

4,435,357

SUPPORT FOR USED FUEL RODS IN NUCLEAR INSTALLATIONS

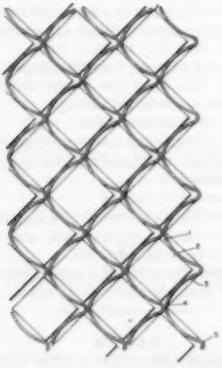
Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Gg. Noell GmbH, Würzburg, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,441

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004239

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—272 **11 Claims**



1. A structure for storing a plurality of spent fuel elements of nuclear power plants comprising a plurality of chambers wherein the wall separating one chamber from a plurality of other chambers comprises only two elements in the form of strips which strips also form all of the wall separating additional individual chambers from a plurality of other additional chambers, and wherein said pair of strips for separating one chamber from a plurality of other chambers are all of the same arched shape having large concave cylindrical surfaces on one side and large corresponding convex cylindrical surfaces on the other side of the strip such that the spacing between the fuel elements from each other is provided by the curved arched strips of the structure and where the separation distance for neighboring fuel elements is provided by one of the neighboring fuel elements contacting the strip tangentially at the convex cylindrical side surface part of the arched strip while the other neighboring fuel element contacts the strip about near the outer edge of the concave cylindrical side surface part and where the distance of the neighboring fuel elements from each other depends on the size of the curvature of the arched strip along the neighboring sides of the adjacent fuel elements.

4,435,358

MEANS FOR FIXATION OF SPENT NUCLEAR ELEMENTS

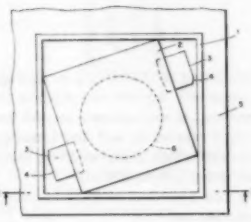
Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Gg. Noell GmbH, Würzburg, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,638

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004274

Int. Cl.³ G21F *7/00*

U.S. Cl. 376—272 **5 Claims**



1. In a nuclear fuel storage device for receiving and storing in nuclear power plants a four sided spent fuel element, a structure including at least one chamber square in cross-section, said structure also including means for preventing relative movements between the walls of the chamber and the fuel element therein wherein the novel feature comprises at least two guided surfaces inside the chamber engaging the bottom of the fuel element at opposite sides thereof, each of the guide surfaces being oblique in regard to the longitudinal axis of the chamber and adapted to cause engagement between each of the four edges of a fuel element and one of the walls of the chamber by imparting a rotary motion to the fuel element around the longitudinal axis of the chamber.

4,435,359

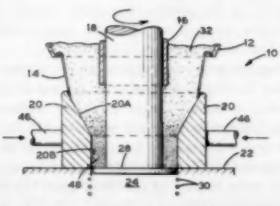
APPARATUS AND METHOD FOR FABRICATING TUBES FROM POWDER

Herbert L. Eiselstein; Darrell F. Smith, Jr., and Edward F. Clatworthy, all of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Jun. 21, 1982, Ser. No. 390,277

Int. Cl.³ B22F *3/02*; B28B *21/42, 3/08*; B29D *23/04*

U.S. Cl. 419—3 **9 Claims**



1. An apparatus for fabricating tubes from metal powders, the apparatus comprising a powder hopper, means for rotating

and withdrawing the mandrel from the hopper, a plurality of arcuate tube forming dies spatially circumscribing the mandrel, means for expanding and contracting the dies about the mandrel, the dies and the mandrel defining a tube compaction zone therebetween, flexible means disposed between the hopper and the dies for preventing the powder from escaping from the hopper, and an aperture for withdrawing the mandrel and resultant tube through the aperture disposed after the compaction zone.

7. A method for fabricating tubes from metal powders, the method comprising:

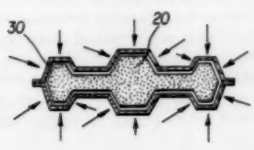
a. introducing the powder into a hopper;
b. rotating a mandrel disposed within the hopper, the powder in communication with the mandrel;
c. contracting a plurality of arcuate dies spatially disposed about the mandrel to compact the powder in a compaction zone formed between the mandrel and the dies to form a tube section;
d. withdrawing the mandrel and resultant tube section;
e. expanding the dies to permit additional powder to enter the compaction zone;
g. flexing flexible means disposed between the hopper and the die, to prevent the powder from escaping from the hopper; and
h. repeating steps (a) through (g) until a continuous tube of desired length is fabricated.

4,435,360

METHOD OF MANUFACTURING METAL PIECES BY CASTING AND SINTERING OF A METAL ALLOY POWDER

Jean-Pierre Trottier, Bagneux, and Michel Jeandin, Paris, both of France, assignors to A.R.M.I.N.E.S. and S.N.E.C.M.A., both of Paris, France

Filed Mar. 1, 1982, Ser. No. 353,110
Claims priority, application France, Feb. 27, 1981, 81 03904
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—49 **9 Claims**



1. A method for preparing a metal piece utilizing a formal casting and an nonconforming airtight casing of metal soldered ribbon of a predetermined thickness which comprises:

introducting a metal load of predetermined composition inside said formal casting;
heating said casting under predetermined temperature and time conditions so as to obtain a porous preform with a plurality of open pores;
decasting said preform;
introducing said preform inside said nonconforming airtight casing; and
heating said preform under isostatic pressure so as to execute a formal metal piece via compactification and sintering such that said airtight casing is distorted under the action of said isostatic pressure and intimately contacts said preform to transmit said isostatic pressure to said preform.

4,435,361

CORROSION INHIBITION SYSTEM CONTAINING DICYCLOPENTADIENE SULFONATE SALTS

Michael G. DaGue, and Frederick W. Valone, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,163
Int. Cl.³ C23F *11/04*; C09K *7/00*; C04B *9/02*; C07F *143/00*
U.S. Cl. 422—12 **26 Claims**

1. An oil-dispersible corrosion inhibiting solution comprising about 0.25% to about 10% by weight of a compound represented by the formula

$$DH_x(SO_3M)_x(SO_2M)_y$$

wherein D is a dicyclopentadiene moiety, M is an alkali metal, alkaline earth metal or ammonium cation, x is 1 or 2 and y is 0, 1 or 2, provided that y is less than or equal to x.

23. A method of protecting metals from corrosive agents in hydrocarbon and aqueous fluids which comprises contacting the metal with an effective amount of a compound represented by the formula

$$DH_x(SO_3M)_x(SO_2M)_y$$

wherein D is a dicyclopentadiene moiety, M is an alkali metal, alkaline earth metal or ammonium cation, x is 1 or 2 and y is 0, 1 or 2, provided that y is less than or equal to x.

4,435,362

INTEGRAL MULTILAYER ANALYTICAL ELEMENT FOR THE ASSAY OF TOTAL PROTEIN

Harumi Katsuyama, and Masaaki Terashima, both of Asaka, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Japan

Filed Nov. 12, 1982, Ser. No. 441,062
Claims priority, application Japan, Nov. 17, 1981, 56-184080
Int. Cl.³ G01N *21/78, 33/68*
U.S. Cl. 422—56 **7 Claims**

1. An integral multilayer analytical element for the assay of total protein contained in liquid sample using a biuret reaction, said element comprising a transparent support on which a reagent layer and a spreading layer are superposed, said reagent layer being positioned between said spreading layer and said transparent support;

said reagent layer containing potassium sodium tartarate, a cupric salt, a basic compound providing a pH in excess of about 12.0 in said element under conditions of use thereof, an alkali-proof polymer and an alkali metal ion complexing agent.

4,435,363

CONTINUOUS COUNTERCURRENT LIQUID-SOLIDS CONTACTOR

Allyn L. Boldt, Kennewick, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

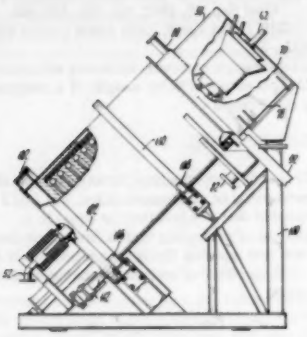
Filed Jul. 2, 1981, Ser. No. 280,113
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—270 **64 Claims**

1. An apparatus for providing countercurrent liquid-solid contact comprising:

(a) an Archimedes' screw having a bottom end and a top end for conveying solids uphill from said bottom end to said top end;
(b) a distribution system including a first housing containing a plurality of first weirs and a plurality of first means for maintaining open communications between said housing and said Archimedes' screw so that liquid may pass between said screw and said housing;
(c) means for injecting solid material into said bottom end of said Archimedes' screw;
(d) means for injecting liquid into said distribution system;
(e) means for rotatably supporting said Archimedes' screw with its longitudinal axis at an acute angle with respect to the horizontal;

(f) means for rotating said Archimedes' screw about said longitudinal axis to convey said solids uphill;

(g) means for withdrawing liquid and dissolved solids after contact with said solids from said apparatus; and



(h) means for withdrawing undissolved solid material after contact with said liquid from said Archimedes' screw.

4,435,364

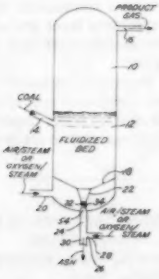
FLUIDIZED BED GASIFIER OR SIMILAR DEVICE FOR SIMULTANEOUS CLASSIFICATION OF ASH AND UNREACTED COAL

Karl S. Vorres, Western Springs, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Division of Ser. No. 288,158, Jul. 29, 1981, Pat. No. 4,369,045. This application Sep. 30, 1982, Ser. No. 428,785

Int. Cl.³ C10J *3/56*; F27B *15/00*

U.S. Cl. 422—145 **15 Claims**



1. In an apparatus for withdrawing agglomerated solids, from a fluidized bed of solid hydrocarbonaceous particles, said apparatus having an upright vessel containing a fluidized bed of hydrocarbonaceous particles, said vessel having a bottom, means defining a passage positioned at the bottom of said vessel for withdrawal of agglomerated solids from the fluidized bed, said passage having a top end, a bottom end and a constricted opening therebetween, and an upwardly extending portion wherein said agglomerated solids are formed, and means for passing a gas stream upwardly into the bottom of the vessel through said passage, the improvement which comprises means defined on the interior surface of said passage for guiding said agglomerated solids in a helical motion during flow of said solids through said passage from said top end of said constricted opening to said bottom end of said constricted opening, said guiding means comprising at least one spiral ridge positioned on the interior surface of said constricted opening for increasing the rate of solid agglomerate discharge from said fluidized bed.

4,435,365

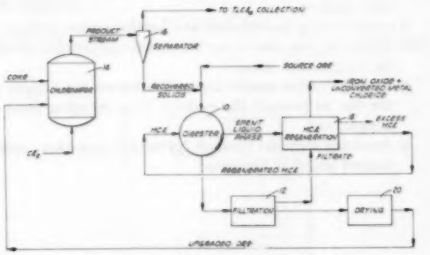
PROCESS FOR PRODUCING TITANIUM TETRACHLORIDE

Alan J. Morris, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed May 12, 1982, Ser. No. 377,334

Int. Cl.³ C01G *23/02*

U.S. Cl. 423—76 **8 Claims**



1. In a process for producing titanium tetrachloride from an iron-titanium ore wherein said ore is subjected to a leaching step where, in a digestion zone, said ore is leached, at elevated temperatures, with a leach liquor containing hydrochloric acid to produce a solid phase of upgraded titanium-containing material and a spent liquid phase containing dissolved metal chlorides; a first separation step wherein said solid phase and said spent liquid phase are separated; an acid regeneration step where, in an acid regeneration zone, the metal chlorides dissolved in the spent liquid phase are reacted at elevated temperatures in the presence of air and water to produce hydrochloric acid; a chlorination step where, in a chlorination zone, said separated solid phase is chlorinated in the presence of a carbonaceous reducing agent at elevated temperatures to produce a product stream containing a titanium tetrachloride phase and an entrained solids phase, said entrained solids phase containing metal chlorides, unreacted upgraded titanium-containing material and unreacted reducing agent and a second separation step wherein said titanium tetrachloride phase is separated from said entrained solids phase, the improvements which comprise:

combining said entrained solids phase with a liquid mdium consisting of water or leach liquor containing hydrochloric acid and additional iron-titanium ore to dissolve said metal chlorides in said medium and to suspend said unreacted titanium-containing material and unreacted reducing agent in said medium;

separating said liquid medium into a liquid phase containing dissolved metal chlorides and a solid phase containing unreacted titanium-containing material and unreacted reducing agent from the chlorination product stream;

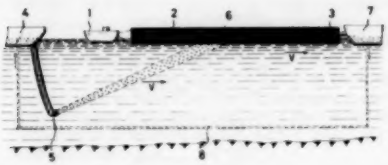
recovering chlorine values from said dissolved metal chlorides in said liquid phase as hydrochloric acid by reaction of said metal chlorides in said acid regeneration zone; and

recovering titanium values from said unreacted titanium-containing material and unreacted reducing agent in said solids phase as titanium tetrachloride by chlorinating said unreacted titanium-containing material in said chlorination zone.

4,435,366
METHOD AND APPARATUS FOR CONCENTRATION OF TRACE MATERIAL FROM LARGE WATER VOLUMES

Dieter Heitkamp, and Klaus Wagener, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 104,811, Dec. 18, 1979, abandoned. This application May 12, 1981, Ser. No. 262,828
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914203
Int. Cl.³ B01D *15/02*
U.S. Cl. 423—6 **12 Claims**



6. A method of concentrating a trace material dissolved in a body of water having a layer with a natural current by accumulation of the trace material on the surface areas of carrier bodies having a density less than that of water, the method comprising the steps of:

discharging the carrier bodies into the body of water at a discharge station positioned at a selected depth in the layer, said body of water being sea water;

allowing the carrier bodies to rise vertically through the layer while being transported horizontally by the current;

accumulating the trace material on the exposed surface areas of the carrier bodies by adsorption as the carrier bodies rise and are transported, said trace material being uranium;

collecting the carrier bodies downstream of the discharging station after the carrier bodies have risen through the layer and have accumulated trace materials thereon;

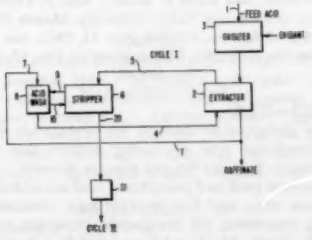
removing trace material from the carrier bodies after the carrier bodies have been collected; and

returning the carrier bodies with the trace material removed therefrom upstream to the discharge station for subsequent discharge to again adsorb trace material in the layer of the body of water as the current brings additional trace material into proximity with the carrier bodies.

4,435,367
BARREN SOLVENT WASH BY OXIDIZED RAFFINATE ACID IN THE PROCESS OF URANIUM EXTRACTION FROM PHOSPHORIC ACID

Edward J. Steck, Lakeland, Fla., assignor to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Jul. 21, 1981, Ser. No. 285,666
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—10 **9 Claims**

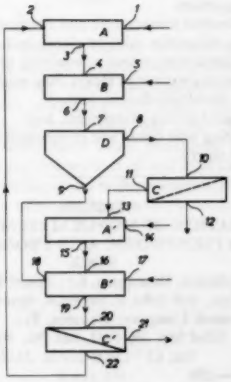


1. In the method of recovering uranium from wet process phosphoric acid, where, in the first cycle of the process, wet process phosphoric acid feed solution is passed through an extraction means to provide a uranium rich organic solvent stream containing di-alkyl phosphoric acid and trialkylphosphine oxide extractants and an oxidized, aqueous raffinate acid stream, and wherein the uranium rich solvent stream is passed through a reductive stripper means, to provide a barren, organic solvent stream which contains entrained, reduced iron containing phosphoric acid, and a product acid stream which is oxidized and passed to the second cycle of the uranium recovery process; the improvement comprising, in the first cycle of the process, contacting the barren, organic solvent stream which contains entrained, reduced iron containing phosphoric acid exiting the stripper means, and before extraction, with an acid wash of oxidized raffinate acid, in an amount effective to remove about 70% to 98% of the entrained phosphoric acid.

4,435,368
HYDROMETALLURGICAL PROCESS FOR SELECTIVE DISSOLUTION OF MIXTURES OF OXY COMPOUNDS

Jean-Michel Demarthe, Viroflay; Paolo Fossi, Elancourt, and Louis Gandon, Rambouillet, all of France, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 950,446, Oct. 11, 1978, which is a continuation of Ser. No. 904,306, May 9, 1978, abandoned, which is a continuation of Ser. No. 765,813, Feb. 4, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 86,791
Claims priority, application France, Feb. 6, 1976, 76 03266
Int. Cl.³ C01G *5/00, 51/00, 53/00, 21/00*
U.S. Cl. 423—40 **1 Claim**



1. A process for the selective dissolution of oxygenated compounds containing at least a nickel compound selected from the group consisting of nickel oxide, nickel carbonate and mixtures thereof, present in a mixture of oxygenated compounds containing said nickel compound and at least cobalt, copper and lead, comprising suspending the mixture of the oxygenated compounds in an aqueous phase, treating the resulting aqueous suspension at a pH exceeding about 1 and at a temperature of from about 60° to 100° C. with chlorine to selectively solubilize said nickel compound while said cobalt, copper and lead remain in an essentially insoluble residue, and separating the aqueous solution containing the dissolved said nickel compound from the insoluble residue.

4,435,369

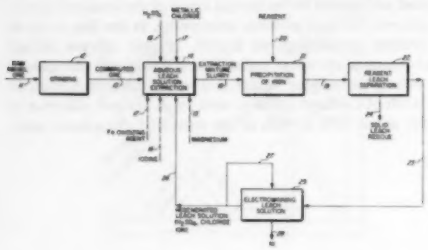
HYDROMETALLURGICAL PROCESS FOR EXTRACTION OF NICKEL

Charles H. Simpson, 7749 E. Chaparrel Rd., Scottsdale, Ariz. 85253

Continuation-in-part of Ser. No. 275,763, Jun. 22, 1981. This application Jul. 29, 1982, Ser. No. 402,977

Int. Cl.³ C01G *53/09*

U.S. Cl. 423—147 **4 Claims**



1. A hydrometallurgical process for extracting nickel from raw nickel oxide-laterite ore comprising the steps of

(a) contacting said comminuted nickel bearing minerals in an extraction zone with an aqueous solution containing stoichiometric amounts of metal and chloride ions necessary to displace nickel contained in the ore and including

(i) at least one oxidizing agent selected from the class of sodium hypochlorite, calcium hypochlorite and potassium hypochlorite;

(ii) at least one metal chloride selected from the group consisting of aluminum chloride, cupric chloride, copper chloride and tin chloride,

(iii) sodium chloride,

(iv) sulfuric acid, and

(v) magnesium

at an elevated temperature and continuing said contact to form an extraction mixture slurry including

(vi) a liquid component comprising an aqueous solution containing extracted nickel from said comminuted minerals dissolved therein, and

(vii) a solid tailing component, and

(b) separating said liquid and components of said extraction mixture slurry.

4,435,370

PREPARATION OF MONOCALCIUM PHOSPHATE AND/OR PHOSPHORIC ACID FROM PHOSPHATE ROCK

Dysart E. Holcomb, Shreveport, La.; Erhart K. Drechsel, Montgomery, Tex., and John B. Sardisco, Shreveport, La., assignors to Pennzoil Company, Houston, Tex.

Filed Sep. 29, 1981, Ser. No. 306,856

Int. Cl.³ C01B *25/22, 25/32*

U.S. Cl. 423—158 **10 Claims**

1. A process for the production of monocalcium phosphate and phosphoric acid, and calcium fluoride, which comprises:

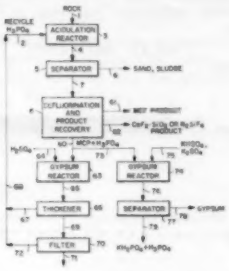
(a) acidulating phosphate rock with an excess of phosphoric acid in the presence of silicon dioxide to produce an acidulation reaction product mixture containing monocalcium phosphate, phosphoric acid, and insoluble solids;

(b) separating insoluble solids from the mixture to recover a clarified solution of monocalcium phosphate in phosphoric acid;

(c) cooling the clarified solution to precipitate at least a portion of the monocalcium phosphate;

(d) recovering a portion of the monocalcium phosphate solid and passing the resulting solution to a defluorination stage wherein sufficient alkali metal ion is added to cause formation of alkali metal fluosilicate with the fluoride and silicon dioxide values contained in the clarified solution with resultant precipitation of said alkali metal fluosilicate;

(e) removing the solid alkali metal fluosilicate and monocalcium phosphate and hydrolyzing the alkali metal fluosilicate in an aqueous medium in the presence of the calcium ion provided by the monocalcium phosphate to convert the alkali metal fluosilicate and form calcium fluoride and silicon dioxide;



(f) removing the solid calcium fluoride and silicon dioxide from the mixture;

(g) recycling the alkali metal ion and excess monocalcium phosphate hydrolysis solution to the defluorination stage; and

(h) removing the phosphoric acid and monocalcium phosphate process liquids from the defluorination reactor.

4,435,371

SULFUR REMOVAL FROM A GAS STREAM

Kenneth J. Frech, Tallmadge, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 26, 1982, Ser. No. 352,812

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 **11 Claims**

1. A process for removing hydrogen sulfide, sulfides and mercaptans from a gas stream which comprises the steps in combination of:

(a) contacting the gas stream with an oxide of a metal selected from the group consisting of iron, chromium, cobalt, lead, manganese, molybdenum, nickel, copper, vanadium, zinc, tungsten, and antimony;

(b) introducing ammonia onto the metal oxide; and

(c) subsequently or concurrently introducing hydrogen peroxide onto the metal oxide while continuing to contact the gas stream with the metal oxide.

4,435,372

PRODUCTION OF PURIFIED STRONG WET-PROCESS PHOSPHORIC ACID

Alva W. Frazier, and Ewell F. Dillard, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 417,804, Sep. 13, 1982, now Defensive Publication No. T103,202. This application Jan. 17, 1983, Ser. No. 458,403

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—321 R **26 Claims**

1. In an improved process for the preparation of purified strong phosphoric acid containing greater than about 40 weight percent P_2O_5 by the wet process wherein:

A. phosphate rock and phosphoric acid are added to a first reaction zone, said first reaction zone containing a first slurry containing the congeneric impurities comprising Fe_2O_3, Al_2O_3, MgO, and F, and said first slurry comprising calcium sulfate, monocalcium phosphate, phosphoric acid, and dissolved calcium, wherein said added phos-

phate rock is converted to monocalcium phosphate, calcium sulfate, and phosphoric acid, and wherein said first slurry is maintained at a soluble sulfate concentration less than the stoichiometric amount required for the formation of calcium sulfate;

B. sulfuric acid is added to a second reaction zone which contains a second slurry containing said congeneric impurities as said first slurry, supra, and said second slurry comprising calcium sulfate, monocalcium phosphate, phosphate rock, and sulfuric acid, wherein said sulfuric acid is reacted with monocalcium phosphate and said phosphate rock to effect the formation of calcium sulfate and phosphoric acid, and second slurry being maintained at a temperature in the range from about 80° C. to about 130° C. for a period of time ranging from about 1 to about 6 hours, and said second slurry being maintained at a soluble sulfate concentration greater than the stoichiometric amount required for the formation of calcium sulfate with the dissolved calcium;

C. a portion of said first slurry is caused to be in intimate contact with at least a portion of said second slurry and simultaneously therewith a portion of said second slurry is caused to be in intimate contact with at least a portion of said first slurry; and

D. a portion of said second slurry, separate from said portion thereof in intimate contact with said first slurry, is introduced into separating means wherefrom is recovered as the liquid product, wet-process phosphoric acid, and as the solid byproduct, calcium sulfate hemihydrate, to wit, $CaSO_4.0.5H_2O$;

the improvement in combination therewith for both effecting desirable environmental fluorine evolution abatement and for eminently improving on the wet acid product purification as it relates to certain congeneric impurities originally present therein, which improvement comprises the steps of:

(1) adjusting the Al_2O_3:MgO weight ratio of said first slurry to the range of between about 2 and about 10;

(2) adjusting the Fe_2O_3 concentration of said first slurry to a range of between about 2.5 and about 5.0 percent by weight to effect the precipitation therein of the two crystalline compounds $(Na,K)_2SiF_6$ and $(Ca,Mg)Al_2F_8.2H_2O$, said Fe_2O_3 functioning as a catalyst;

(3) adjusting the fluorine concentration of said second slurry to the range of between about $1.5\times$wt % $Al_2O_3+0.7$ to about $1.5\times$wt % $Al_2O_3+1.3$ percent by weight to subsequently prevent precipitation therein of $(Fe,Al)_3KH_{14}.(PO_4)_8.4H_2O$ and to effect the precipitation therein of the crystalline compounds $(Ca,Mg)Al_2F_8.2H_2O$ and $(Na,K)_2SiF_6$;

(4) maintaining the temperature of said second slurry in the range between about 80° C. to about 130° C. for a period of time ranging from about 1 hour to about 6 hours; and

(5) subsequently introducing at least a portion of said second slurry into separating means to effect removal therefrom of $CaSO_4.0.5H_2O$ and said precipitated compounds $(Na,K)_2SiF_6$ and $(Ca,Mg)Al_2F_8.2H_2O$;

said improved process characterized by the fact that the concentration of the wet-process phosphoric acid congeneric impurities comprising Al_2O_3 and MgO are reduced therein in the range from about 30 to about 90 percent.

4,435,373

FIBRE PACKS FOR AMMONIA OXIDATION

Arthur G. Knapton, Henley on Thames, and Gordon L. Selman, Sonning Common, Near Reading, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Division of Ser. No. 197,683, Oct. 16, 1980, Pat. No. 4,375,426. This application Aug. 30, 1982, Ser. No. 413,163

Claims priority, application United Kingdom, Oct. 18, 1979, 7936209

Int. Cl.³ C01B *21/26*

U.S. Cl. 423—403 **13 Claims**

1. A process for the production of nitric oxide by the oxidation of ammonia comprising providing a catalyst assembly including an agglomeration or assemblage of randomly oriented melt-extracted or melt-spun fibres made by melt extracting or melt spinning a platinum group metal or an alloy containing at least one platinum group metal and passing a gas stream containing ammonia and oxygen through said assembly.

4,435,374

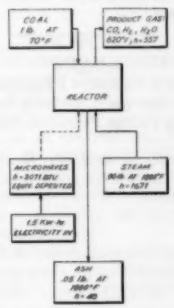
METHOD OF PRODUCING CARBON MONOXIDE AND HYDROGEN BY GASIFICATION OF SOLID CARBONACEOUS MATERIAL INVOLVING MICROWAVE IRRADIATION

John L. Helm, Jr., 171 E. 89th St., New York, N.Y. 10028

Filed Jul. 9, 1981, Ser. No. 281,846

Int. Cl.³ C01B *31/18*

U.S. Cl. 423—415 A **9 Claims**



1. A method for gasifying carbon of solid carbonaceous material to produce carbon monoxide and hydrogen, which comprises providing a bed of solid carbonaceous material with interstices in the bed, infiltrating superheated steam through said interstices thereby contacting said solid carbonaceous material with said superheated steam, and during said infiltration irradiating the contact product of said solid carbonaceous material and superheated steam with an amount of microwave energy sufficient to effect gasification of the carbon.

4,435,375

METHOD FOR PRODUCING A CARBON FILAMENT AND DERIVATIVES THEREOF

Shohei Tamura, c/o Tohdai-shokuin-shukusha, 8, Komaba 4-chome, Meguro-ku, Tokyo; Mizuka Sano, Koganei; Hiroo Inokuchi, Okazaki; Koshiro Toriumi, Okazaki, and Naoki Sato, Okazaki, all of Japan, assignors to Shohei Tamura, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,604

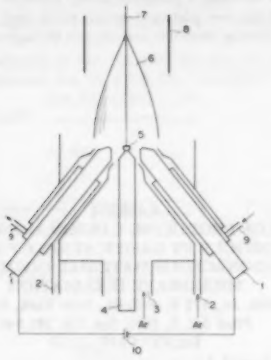
Claims priority, application Japan, Mar. 27, 1981, 56-44956

Int. Cl.³ C01B *31/30, 31/04*; D01F *9/12*

U.S. Cl. 423—439 **7 Claims**

1. A method for producing a graphite filament which comprises purifying a graphite material, heating the resulting purified graphite material in a plasma having an electron tempera-

ture of at least 3,400° C. under a pressure of about 1 atm. to form a carbon filament, then subjecting the carbon filament to



heat treatment at a temperature of at least 2,500° C. to effect graphitization thereof.

4,435,376

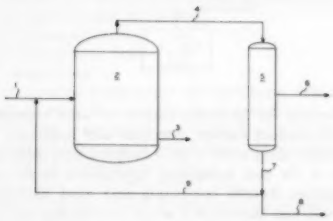
FIBROUS CARBON PRODUCTION

Randall A. Porter, and Larry E. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 26, 1982, Ser. No. 362,349

Int. Cl.³ D01F *9/12*; C01B *31/02, 3/24*

U.S. Cl. 423—447.3 **13 Claims**



1. A process of decreasing the amount of externally-supplied carrier gas required in a pyrolysis operation for producing carbon particles from a carbonaceous feed comprising alkanes having from about 4 to about 10 carbon atoms comprising the steps of: (1) pyrolyzing the feed in a pyrolysis zone at a temperature ranging from about 500° C. to about 800° C., (2) removing hydrocarbon-containing effluent from the pyrolysis zone, (3) treating the effluent to remove hydrogen therefrom, and (4) employing the treated effluent as a carrier for carbonaceous feed to the pyrolysis zone.

4,435,377

OXIDATIVE AFTER-TREATMENT OF CARBON BLACK

Lothar Rothbühr, Hürth, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 313,028, Oct. 19, 1981, abandoned. This application Oct. 6, 1982, Ser. No. 433,072

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1980, 3041188

Int. Cl.³ C09C *1/56, 1/48*; C01B *31/02*

U.S. Cl. 423—460 **9 Claims**

1. A process for the after-treatment of powdery carbon black with an oxidation agent which is gaseous, vaporous or aerosol-like in order to convert carbon black with a non-polar surface into carbon black which has a polar surface and thereby to improve the compatibility of the carbon black with polar binders for lacquers and printing inks, comprising introducing the powdery carbon black into a reaction zone, said reaction zone having an upper and a lower portion, introducing into the lower reaction zone an oxidation agent whereby said oxidation agent flows from the lowest part of the reaction zone up through the carbon black in said reaction zone, continuously agitating said carbon black in said reaction zone, said reaction zone being a vertical, cylindrical reactor, containing a shaft in the middle axis of said reactor, said shaft being equipped with stirrer arms brushing the entire cylinder cross section in an overwhelmingly horizontal position, said arms being displaced in the manner of tiers over the height of the reactor and rotating with a speed such that the stirrer arm points move between 0.2 and 2.0 m/sec, whereby the volume of the oxidation agent stream is dimensioned so that the reaction temperature in the reactor remains below about 150° C., after the carbon black reaches the desired degree of oxidation, removing the surplus of oxidation agent by flushing air while maintaining the above-mentioned stirring movement and recovering the treated carbon black product in a powdery form without compression or agglomeration of the carbon black.

4,435,378

PROCESS FOR REMOVING EXTRACTABLE SUBSTANCES FROM CARBON BLACK

Reinhold Reck, Maintal; Gerhard Kühner, Hanau; Manfred Voll, Erlensee, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,051

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118907

Int. Cl.³ C01B *31/02, 31/00*; C09C *1/56*

U.S. Cl. 423—461 **7 Claims**

1. A process for removing toluene extractable substances from powdery carbon blacks by treatment with a stream of gas at an elevated temperature comprising treating powdery carbon black containing 0.15 to 1.5% by weight of toluene extractable substances with an oxygen containing gas in a fluidized bed at a temperature from 200° to 320° C.

4,435,379

PROCESS FOR TREATING CHLORINATED HYDROCARBONS

Robert S. Olson, Lafayette; Joseph P. Suris, Jr., Walnut Creek, and Ben F. West, Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 18, 1982, Ser. No. 409,383

Int. Cl.³ C01B *9/02*; C01G *27/00, 41/00, 25/00*

U.S. Cl. 423—472 **11 Claims**

1. A process for using a chlorinated hydrocarbon to convert a metal oxide to a metal chloride or metal oxychloride, said process consisting essentially of:

contacting at reactive conditions at least one gaseous chlorinated hydrocarbon of the formula $C_aH_bCl_c$, wherein "a" is an integer greater than 1, "c" is an integer greater than 0 and "b" is an integer equal to at least 0, with a sufficient quantity of a suitable refractory metal oxide and a sufficient quantity of chlorine to convert substantially all of the carbon atoms of the chlorinated hydrocarbon to carbon monoxide or carbon dioxide and to convert any hydrogen moieties present on the chlorinated hydrocarbon to hydrogen chloride, wherein the ratio of carbon atoms present to oxygen atoms available for reaction is in the range from about 1:1 to about 1:2 and the metal oxide is chlorinated contemporaneously with the oxidation of the chlorinated hydrocarbon.

4,435,380

HUMECTANTS FOR CLEAR GEL DENTIFRICE COMPOSITIONS

Morton Pader, Teaneck, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 344,238, Jan. 29, 1982, abandoned. This application Apr. 18, 1983, Ser. No. 485,913
Int. Cl.³ A61K 7/16
U.S. Cl. 424—49 23 Claims

1. A visually clear dentifrice composition comprising about 20 to 70% by weight of humectant solids, about 5 to 50% by weight of an abrasive, and water,

(a) the humectant solids comprising a hydrogenated hydrolyzed polysaccharide wherein said hydrogenated hydrolyzed polysaccharide contains 25% or less maltitol and at least about 20 to 30% by weight DP_{10} oligosaccharides or higher;

(b) said abrasive being capable of:

(i) cleaning and polishing human teeth without damaging said teeth, and of

(ii) forming a clear gel when combined with the humectant system,

(c) the amount of water and the distribution of the molecular weights of said hydrogenated hydrolyzed polysaccharide being such as to render the dentifrice composition translucent or transparent.

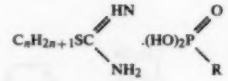
4,435,381

THIOURONIUM PHOSPHONATES FOR USE IN DENTAL TREATMENTS

Edward E. Flagg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 18, 1983, Ser. No. 514,999
Int. Cl.³ A61K 7/16, 7/22
U.S. Cl. 424—54 9 Claims

1. A method for treating the teeth and gums of animals which comprises applying to the dental surfaces an effective amount of a compound corresponding to the formula



in which n is an integer of from about 10 to about 14, and R is hydrogen, methyl or phenyl.

4,435,382

ANHYDROUS ALCOHOLIC ANTIPERSPIRANT SUSPENSION COMPOSITION CONTAINING CERTAIN ALUMINUM OR ALUMINUM/ZIRCONIUM SALT GLYCINE COMPLEXES

Chung T. Shin, Livingston, and Navin Geria, Elizabeth, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,925
Int. Cl.³ A61K 7/34, 7/38
U.S. Cl. 424—66 21 Claims

1. A roll-on antiperspirant suspension composition adapted to be dispensed from a roll-on dispenser comprising an anhydrous ethyl alcohol vehicle containing an effective amount of a suspending agent and an antiperspirant effective amount of an astringent salt glycine complex suspended in said alcoholic vehicle, said complex being selected from the group consisting of aluminum/zirconium/tetrachlorohydrate glycine complexes; aluminum/zirconium/trichlorohydrate glycine complexes; aluminum/zirconium/pentachlorohydrate glycine complexes; aluminum/zirconium/octachlorohydrate glycine complexes; and aluminum/sesquichlorohydrate glycine complexes and mixtures of said complexes; said composition containing from about 20% to about 65% by weight of anhydrous ethyl alcohol.

4,435,383

SLOW RELEASE PESTICIDE FORMULATIONS

Robert D. Wysong, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 184,209, Sep. 5, 1980, abandoned. This application Jul. 22, 1981, Ser. No. 284,700
Int. Cl.³ A01N 25/10; A61K 31/74
U.S. Cl. 424—78 30 Claims

1. A solid one-phase pesticidal composition containing no solvent and consisting essentially of about 5 to 75 weight % pesticide in homogeneous combination with a cross-linked copolymer prepared from

(a) about 40 to 80% by weight of a hydrophobic barrier monomer selected from styrene and α-methyl styrene, and

(b) about 20 to 60% by weight of one or more unsaturated mono- or di-carboxylic acids in which all or part of the carboxyl groups may be in the anhydride form,

where 5 to 95% of the available carboxyl groups in said copolymer are cross-linked with a cross-linking agent selected from (i) one or more aromatic polyfunctional amines, optionally in combination with one or more aromatic polyfunctional isocyanates, aliphatic polyfunctional amines, polyols or polyfunctional epoxides.

4,435,384

TRANSFER FACTOR COMPOSITION AND SKIN TREATMENT

Stanley L. Warren, Hallendale, Fla., assignor to Viragen, Inc., Hasbrouck Heights, N.J.

Filed Apr. 30, 1982, Ser. No. 373,816
Int. Cl.³ A61K 35/14, 39/00
U.S. Cl. 424—101 17 Claims

1. A topical composition for dermatological treatment comprising an ointment-type vehicle and an effective amount of transfer factor dispersed therein.

11. A method of dermatological treatment comprising applying to the affected skin a topical composition comprising a vehicle including transfer factor dispersed therein.

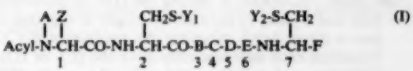
4,435,385

N-ACYL-POLYPEPTIDES AND PROCESSES FOR THE PRODUCTION THEREOF

Wilfried Bauer, Lampenberg, and Janos Pless, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Mar. 2, 1982, Ser. No. 353,900
Claims priority, application Switzerland, Mar. 6, 1981, 1531/81; Sep. 4, 1981, 5723/81
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 20 Claims

1. An N-acyl-polypeptide of formula I,



(I)

where

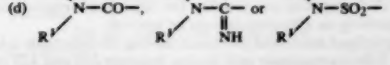
"Acyl" is

(a) $R^{I}CO$— wherein R^{I} is C_{1-20}alkyl, C_{3-20}alkenyl, C_{3-20}alkinyl, phenyl, naphthyl or C_{7-10}(phenylalkyl);

(b) $R^{II}SO_2$— wherein R^{II} is C_{1-10}alkyl, phenyl or C_{7-10}(phenylalkyl);

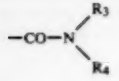
(c) $R^{III}O$—CO— wherein R^{III} is C_{1-10}alkyl or C_{7-10}(phenylalkyl); and

(d)

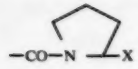


wherein

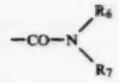
R^{IV} is hydrogen, C_{1-10}alkyl, phenyl or C_{7-10}(phenylalkyl) and
R^{V} is hydrogen or C_{1-10}alkyl,
A is hydrogen or C_{1-3}alkyl,
>N—CH(Z)—CO— is
(a) an (L)- or (D)-phenylalanine residue optionally ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3}alkyl and-/or C_{1-3}alkoxy, or
(b) the residue of a natural α-amino acid in which Z is alkyl of 3 to 4 carbon atoms,
B is —Phe— optionally ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3}alkyl and/or C_{1-3}alkoxy,
C is —Trp— or (D)-Trp- optionally α-N-methylated and optionally benzene-ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3}alkyl and/or C_{1-3}alkoxy,
D is —Lys— optionally α-N-methylated and optionally ε-N-C_{1-3}alkylated,
E is —Thr— or —(D)—Thr— optionally α-N-methylated,
F is a group of formula —$COOR_1$, —CH_2OR_2,



or



wherein
R_1 is hydrogen or C_{1-3}alkyl,
R_2 is hydrogen or the residue of a physiologically acceptable, physiologically hydrolysable ester,
R_3 is hydrogen or methyl,
R_4 is —$CH(R_5)$—X,
R_5 is hydrogen, —$(CH_2)_2$—OH, —$(CH_2)_3$—OH, —CH_2—OH, —$CH(CH_3)$—OH or isobutyl, and
X is a group of formula —$COOR_1$, —CH_2OR_2 or



wherein
R_1 and R_2 are as defined above,
R_6 is hydrogen or C_{1-3}alkyl and
R_7 is hydrogen, C_{1-3}alkyl, phenyl or C_{7-10}phenylalkyl,
the group —$CH(R_5)$—X having the (D)- or (L)-configuration, and Y_1 and Y_2 are each hydrogen or together represent a direct bond, whereby the residues in the 2- and 7-position each independently have the (L)- or (D)-configuration, and with the proviso that (L)- and/or (D)-cysteine residues are present at the 2- and 7-positions only, or a pharmaceutically acceptable salt or complex thereof.

4,435,386

REFINED DETOXIFIED ENDOTOXIN PRODUCT

Edgar E. Ribi, and Cantrell John L., both of Hamilton, Mont., assignors to Ribi ImmunoChem Research, Inc., Hamilton, Mont.

Filed May 26, 1982, Ser. No. 382,406
Int. Cl.³ A61K *37/00*; **A01N** *65/00*; **C07G** *7/00*
U.S. Cl. 424—177 **11 Claims**

1. A therapeutic composition for imparting immunotherapy comprising an effective amount of each of:
(a) refined detoxified endotoxin having no detectable 2-keto-3-deoxyoctanoate and having between 350 and 475 nmoles/mg of phosphorus and between about 1700 and 2000 nmoles/mg of fatty acids prepared by the method which comprises:
(i) hydrolyzing an endotoxin extract derived from Enterobacteriaciae with an acid capable of hydrolyzing the same;
(ii) lyophilizing the hydrolyzed product to obtain crude lipid A;
(iii) treating crude lipid A with a first solvent capable of dissolving fatty acids contained therein to remove said fatty acids from a resulting insoluble product
(iv) dissolving the resulting insoluble product in a second solvent capable of dissolving the same; and
(v) passing the resulting solution through a chromatographic column of a type which will allow elution of the desired product to obtain the refined detoxified endotoxin;
(b) an acetone precipitated by-product of endotoxic glycolipids extracted with a mixture of chloroform and methanol;
(c) trehalose dimycolate; and
(d) a pharmaceutically acceptable carrier.

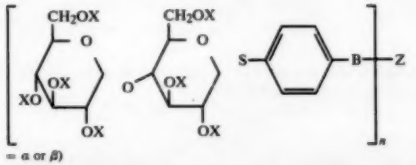
4,435,387

POLY-CATION SALTS OF BIS (OR TRIS) 4-O-POLYHEXOSE-THIO-ARYLENE SULFATE DERIVATIVES

Robert E. Schaub, Upper Saddle River, N.J.; Janis Upeslacis, Pomona, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

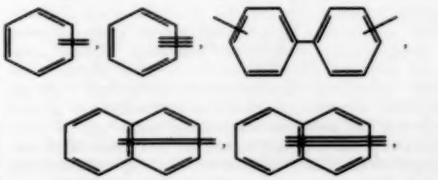
Filed Oct. 25, 1982, Ser. No. 436,750
Int. Cl.³ A61K *31/70*; **C07H** *15/22*
U.S. Cl. 424—180 **42 Claims**

19. A method of modulating the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement modulating amount of a pharmaceutically acceptable compound selected from those of the formula:



(= α or β)

wherein X is —SO_3M and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, ammonia, zinc and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); B is selected from the group consisting of —NHCO— and —$NHSO_2$—; n is an integer 2 or 3; and Z is an arylene selected from the group consisting of:



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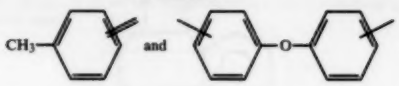


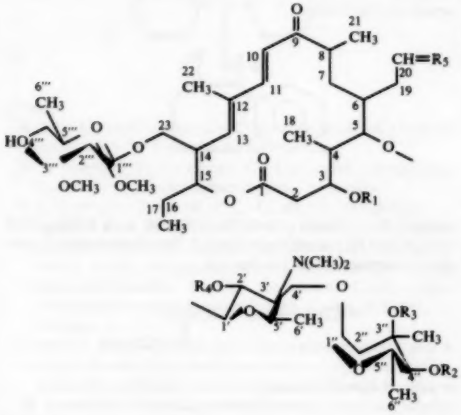
4,435,388

TYLOSIN 20-IMINO-20-DEOXO-4''-ACYL DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Ashit K. Ganguly, Upper Montclair; Alan K. Mallams, West Orange, and Yi-Tsung Liu, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 10, 1982, Ser. No. 386,834
Int. Cl.[3] A61K *31/71;* C07H *17/08*
U.S. Cl. 424—180 45 Claims

1. A compound of the formula



wherein

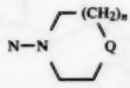
R_1 is hydrogen or an acyl group selected from alkanoyl of 2 to 5 carbon atoms, palmityl, stearyl, lauryl, oleyl, chloroacetyl, benzoyl, adamantanecarbonyl, cyclopropanecarbonyl, cyclohexanecarbonyl, β-cyclohexylpropionyl, phenylacetyl, phenoxyacetyl, mandelyl, 2-thienylacetyl, alkyl-, aryl- and aralkylsulfonyl, substituted aryl- and aralkylsulfonyl, wherein the substituents on the aryl portions are halogen, nitro and alkoxy groups, succinyl, maleyl, fumaryl, malonyl and phthalyl;

R_2 is acyl, wherein acyl is as defined in R_1;

R_3 is hydrogen or acyl, wherein acyl is as defined in R_1; or R_2 and R_3 are together a carbonyl group linking the 3''-and 4''-hydroxyl groups;

R_4 is hydrogen or acyl, wherein acyl is as defined in R_1;

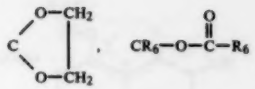
R_5 is selected from the group consisting of



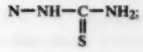
wherein

n is 0–2, and

Q is selected from the gorup consisting of CH_2, CR_6R_7, CHR_6, CHR_7, NH,NR_6, O, S, SO_2, CHOH, $CHOR_6$, $CHOR_7$,



CHCOOH, $CHCOOR_6$, $CHCONH_2$, and $CHCONR_6R_7$, wherein R_6 and R_7 may be the same or different each being a member of the group consisting of (C_{1-C6})alkyl, (C_{7-C10})aralkyl and (C_{6-C10})aryl including X-substituted aryl and aralkyl, wherein X is halogen, trifluoromethyl, (C_{1-C6}) alkoxy, or (C_{1-C6}) alkylcarbonyl; N—NH—aralkyl, and



and the non-toxic pharmaceutically acceptable acid addition salts thereof.

20. A method of eliciting an antibactrial response in a mammal having a gram positive bacterial infection which comprises administering to the mammal a therapeutically effective quantity of a compound according to claim 1.

4,435,389

COMPOSITION FOR PROMOTING GROWTH OF BIFIDOBACTERIA

Masahiko Mutai, Higashi Yamato; Tsuneo Terashima, Musashi Murayama; Tokutaro Takahashi, Tokyo; Ryuichiro Tanaka, Tachikawa; Akio Kuroda, Nishinomiya; Sadao Ueyama, Kobe, and Keisuke Matsumoto, Fujiidera, all of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,463
Int. Cl.[3] A61K *31/71;* C12P *19/04*
U.S. Cl. 424—181 1 Claim

1. A composition for promoting growth of bifidobacteria consisting essentially of a mixture of oligosaccharides represented by the general formula Gal-(Gal)$_n$-Glc, wherein Gal denotes a galactose residue, Glc a glucose residue and n an integer of 1 to 4, and in which the galactose-galactose linkage is β-1,3, β-1,4 or β-1,6 with the β-1,6 linkage being predominant and the galactose-glucose linkage is β-1,3, β-1,4 or β-1,6 with the β-1,4 linkage being predominant; said oligosaccharides being produced by reacting lactose or a lactose-containing material with β-galactosidase produced by *Aspergillus oryzae* at a temperature and time sufficient to produce said composition.

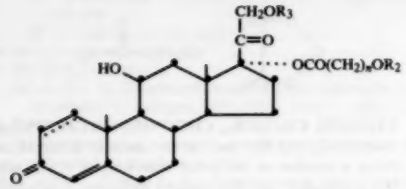
4,435,390

HYDROCORTISONE DERIVATIVES, THE PREPARATION AND USE THEREOF

Klaus Annen; Henry Laurent; Helmut Hofmeister, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,263
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3133082
Int. Cl.[3] C07J *5/00;* A61K *31/56*
U.S. Cl. 424—243 27 Claims

1. A hydrocortisone derivative of the formula



wherein

is a single bond or a double bond,

n is 1 or 2,

R_1 is hydrogen or methyl,

R_2 is alkyl of 1–6 carbon atoms, and

R_3 is hydrogen or alkanoyl of 2–6 carbon atoms.

27. A method of treating inflammation in a patient in need of such treatment comprising administering an amount of a compound of claim **1** effective for such treatment.

4,435,391

DIBENZOXAZEPINE DERIVATIVE, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Kazuo Sasahara, Omiya; Masamitsu Honda, Tokyo; Masuo Koizumi, Tokyo; Yasushi Murakami, Tokyo; Tomohiro Neichi, Tokorozawa; Hiroshi Nakakimura, Kamakura; Yukifumi Noda; Hiroshi Matsushita, both of Tokyo, and Shun-ichi Hata, Yokohama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

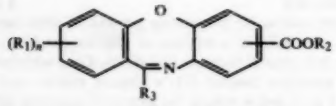
Continuation-in-part of Ser. No. 263,184, May 13, 1981, abandoned. This application Mar. 4, 1982, Ser. No. 354,651

Claims priority, application Japan, May 28, 1980, 55-70176

Int. Cl.[3] **C07D** *273/06;* **A61K** *31/55*

U.S. Cl. 424—244 **20 Claims**

1. A dibenzoxazepine derivative of the formula:



(I)

wherein the carboxy substituent is in the 6- or 8-position; R_1 is a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group; n is an integer of 1 or 2 provided that each R_1 is the same or different when n is 2; R_2 is a hydrogen atom or a lower alkyl group; R_3 is a lower alkyl group, a phenyl group which may have a m-CH_3 group substituent or a styryl group; or a pharmaceutically acceptable salt thereof.

4,435,392

2,5-BENZODIAZOCINE DERIVATIVES AND SALTS THEREOF, AS WELL AS PHARMACEUTICAL AGENT COMPRISING AS EFFECTIVE COMPONENT AT LEAST ONE OF THE DERIVATIVES AND SALTS

Masatoshi Ban, Gifu; Kenji Miura, Kasugai; Yutaka Baba, Bisai; Noriyuki Iwata; Akira Fukui, both of Kasugai; Mikio Hori, Gifu; Hajime Fujimura, Kyoto, and Eiichi Suenaga, Kunitachi, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co. Ltd., Aichi, Japan

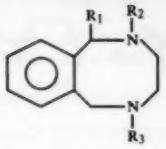
Filed Jan. 24, 1983, Ser. No. 460,649

Claims priority, application Japan, Mar. 24, 1982, 57-45716

Int. Cl.[3] **A61K** *31/33;* **C07D** *245/06*

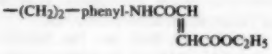
U.S. Cl. 424—244 **4 Claims**

1. A 2,5-benzodiazocine derivative represented by a formula



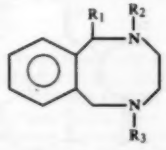
(I)

wherein R_1 is phenyl or p-methoxyphenyl, R_2 is hydrogen or methyl, and R_3 is methoxyphenethyl, 3-(p-fluorobenzoyl)-propyl, cyclopropylmethyl or



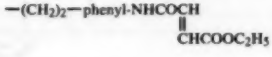
or a salt thereof.

3. A pharmaceutical agent which comprises as an effective component at least one 2,5-benzodiazocine derivative represented by the formula



(I)

wherein R_1 is phenyl or p-methoxyphenyl, R_2 is hydrogen or methyl, and R_3 is methoxyphenethyl, 3-(p-fluorobenzoyl)-propyl, cyclopropylmethyl radical or



or salts of said derivatives.

4,435,393

DERIVATIVES OF 10-(1-AZABICYCLO[2.2.2]OCT-3-YL)-N,N DIMETHYL-10H-PHENOTHIAZINE-2-SULFONAMIDE AS MEDICAMENTS

Marie-Christine Dubroeucq, Enghien-les-Bains, and Jean E. M. A. Rataud, Paris, both of France, assignors to Pharmindustrie, Gennevilliers, France

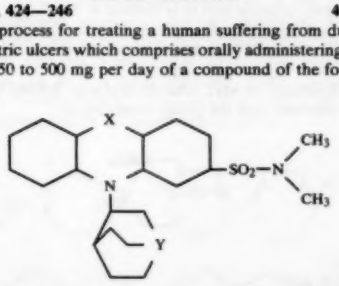
Filed Mar. 22, 1982, Ser. No. 360,150

Claims priority, application France, Apr. 3, 1981, 81 06713

Int. Cl.[3] **A61K** *31/54*

U.S. Cl. 424—246 **4 Claims**

1. A process for treating a human suffering from duodenal and gastric ulcers which comprises orally administering to said human 50 to 500 mg per day of a compound of the formula



in which either X represents an atom of sulfur and Y represents the N-oxide group, or X represents the sulfinyl group or the

sulfonyl group and Y represents an atom of nitrogen or the N-oxide group, or its salt of addition with a pharmaceutically acceptable acid.

4,435,394

3-SULFONAMIDO-BENZOPHENONIMINE DERIVATIVES USEFUL FOR TREATING VIRUS INFECTIONS

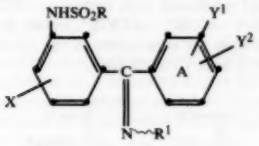
Masaru Ogata, and Kosaburo Sato, both of Hyogo, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Dec. 17, 1981, Ser. No. 332,099

Int. Cl.³ C07C *143/79, 143/75;* A61K *31/18*

U.S. Cl. 424—248.5 **20 Claims**

1. 3-Sulfonamido-benzophenonimine derivatives of the formula:



wherein

R is C_1–C_5 alkyl, amino, C_1–C_5 alkylamino, C_2–C_8 dialkylamino, or 5- or 6-membered heterocycle;

R^1 is hydroxy, C_1–C_5 alkoxy, C_1–C_{10} acyloxy, benzyloxy, amino, C_2–C_5 alkoxycarbonylamino, or ureido;

X is hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, or halogen;

Y^1 and Y^2 each is hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 alkylthio, C_2–C_5 alkoxymethyl, C_2–C_5 alkoxycarbonyl, C_1–C_5 alkylamino, C_2–C_8 dialkylamino, C_1–C_5 alkanesulfonamido, C_1–C_{10} acylamino, C_2–C_8 dialkylaminosulfonylamino, amino, nitro, cyano, hydroxy, or halogen, or

Y^1 and Y^2, taken together, form C_1–C_3 alkylenedioxy; and A ring optionally has a condensed benzene ring or a pharmaceutically acceptable acid addition salt thereof.

19. A method for treating viral infections comprising administering to a host an effective antiviral amount of a compound according to claim **1**.

4,435,395

N-SUBSTITUTED 1,4-DIHYDROPYRIDAZINES AND PHARMACEUTICAL COMPOSITIONS

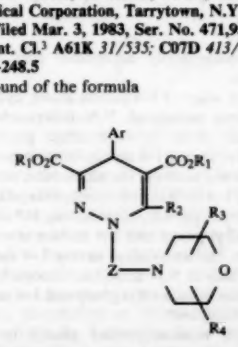
Bernard Loev, Scarsdale; Howard Jones, Ossining, both of N.Y., and James R. Shroff, Riverside, Conn., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,958

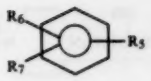
Int. Cl.³ A61K *31/535;* C07D *413/06*

U.S. Cl. 424—248.5 **23 Claims**

1. A compound of the formula



wherein Ar is heteroaryl, cycloalkyl or



wherein each of R_5, R_6 and R_7 is H, alkyl, aryl, halo, lower alkoxy, nitro, amino, alkylmercapto, cyano, carboxy, carbalkoxy, sulfamyl, trifluoromethyl, hydroxy, acyloxy, methanesulfonyl, alkylamino or acylamino; and R_5 and R_6, when taken together, form a methylenedioxy; Z is alkylene containing 1 to about 5 carbon atoms in the principal chain; R_3 and R_4 are each H or alkyl; and each R_1 and R_2 is alkyl; and acid addition salts thereof.

8. An anti-hypertensive composition comprising a compound according to claim **1** and a carrier.

4,435,396

ANTIULCER 2-GUANIDINO-4-(2-SUBSTITUTED-AMINO-4-IMIDAZOLYL)THIAZOLES AND PROCESS THEREFOR

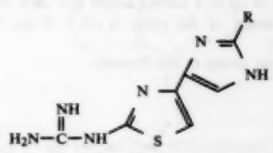
John L. LaMattina, Ledyard, and Christopher A. Lipinski, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 10, 1982, Ser. No. 376,486

Int. Cl.³ C07G *417/04;* A61K *31/425*

U.S. Cl. 424—248.51 **36 Claims**

1. A compound of the formula



wherein

R is NHR^1 or NR^2R^3;

R^1 is $(C_7$–$C_{12})$alkyl, $(C_6$–$C_{11})$pyridylalkyl or $(C_{11}$–$C_{12})$phenylalkyl, optionally monosubstituted or disubstituted on the phenyl group with chloro, bromo, fluoro, $(C_1$–$C_3)$alkoxy or trifluoromethyl; and

R^2 and R^3 are each independently $(C_1$–$C_{12})$alkyl or $(C_7$–$C_{12})$phenylalkyl, optionally monosubstituted or disubstituted on the phenyl group with chloro, bromo, fluoro, $(C_1$–$C_3)$alkyl, $(C_1$–$C_3)$alkoxy or trifluoromethyl; or

R^2 and R^3 are taken together with the nitrogen to which they are attached to form a pyrrolidone, piperidine, perhydro-1H-azepine, or morpholine ring;

or a pharmaceutically-acceptable acid addition salt thereof.

13. A method of inhibiting gastric ulcers in a mammal which comprises administering to said mammal a gastric ulcer inhibiting amount of a compound of claim **1**.

4,435,397

CARBAMYLPIPERAZINE COMPOUNDS

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Kyoto, and Haruo Tanaka, Hikone, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Mar. 26, 1981, Ser. No. 247,881

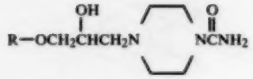
Claims priority, application Japan, Apr. 8, 1980, 55-46443

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

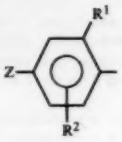
Int. Cl.³ C07D *241/04;* A61K *31/495;* C07D *295/00*

U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is



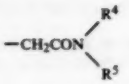
(a)

in which

R^1 is alkyl of up to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms or alkanoyl of up to 6 carbon atoms

R^2 is hydrogen or alkyl of up to 6 carbon atoms, and

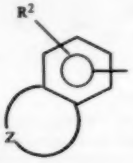
Z is $-CH_2CH_2NHCO_2R^3$, $-NHSO_2R^3$ or



in which

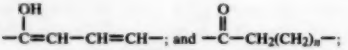
R^3 is alkyl of up to 4 carbon atoms and each of R^4 and R^5 independently of the other is alkyl of up to 4 carbon atoms, or

(b) a bicyclic group of the formula:



in which

Z is a chain of 3 or 4 atoms, said chain being selected from the group consisting of $-(CH_2)_2(CH_2)_n-$; $-CH=CH-(CH_2)_n-$;



n has a value of 1 or 2 and

R^2 is as herein defined.

4,435,398

GUANIDINE COMPOUNDS

M. Mehdi Nafissi-Varchei, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 198,424, Oct. 20, 1980, Pat. No. 4,348,406. This application Feb. 8, 1982, Ser. No. 346,445

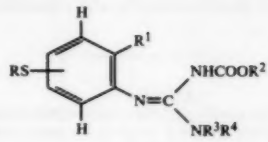
Claims priority, application European Pat. Off., Oct. 12, 1981, 81108212

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ A01N *43/60, 47/44*; C07C *129/12*

U.S. Cl. 424—250 **13 Claims**

1. A compound of the formula



I

wherein

R is C_1 to C_6 alkyl;

R^1 is hydrogen, halo, nitro, $NHCOR^5$ or $NHSO_2R^5$;

R^2 is C_1 to C_6 alkyl or C_1 to C_6 alkyl substituted with C_1 to C_6 alkoxy, hydroxy or amino;

R^3 and R^4 are independently selected from hydrogen, N-alkyl piperidyl, wherein the alkyl group has 1 to 4 carbon atoms, tetrahydropyranyl, morpholinyl, piperidyl, and C_1 to C_6 alkyl substituted with hydroxy, $-SCH_3$, piperazinyl, pyridyl, $-COR^6$, $-COOR^7$, amino, and substituted amino wherein the substituents in the substituted amino are selected from C_1 to C_6 alkyl,

R^5 is C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted with phenyl or with halo, phenyl, or phenyl substituted with C_1 to C_6 alkyl or with halo;

R^6 is C_1 to C_6 alkyl, C_1 to C_6 acyl, or a peptide residue having up to three amino acids;

R^7 and R^8 are C_1 to C_6 alkyl; and the pharmaceutically acceptable acid addition salts thereof.

4,435,399

2-ARYL-1-(IMIDAZOL-1-YL)-8-(4-PIPERAZIN-1-YLPHENOXY) OCTAN-2-OL ANTIFUNGAL AGENTS

Kenneth Richardson, and Geoffrey E. Gymer, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

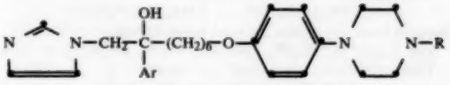
Filed Jun. 25, 1982, Ser. No. 392,394

Claims priority, application United Kingdom, Jul. 18, 1981, 8122246

Int. Cl.³ C07D *403/06*; A61K *31/495*

U.S. Cl. 424—250 **28 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

R is hydrogen, alkyl of 1–4 carbon atoms, cycloalkyl of 3–7 carbon atoms, carbamoyl, N,N-dialkylcarbamoyl having 1–4 carbon atoms in each alkyl group, N,N-dialkylaminoalkyl having 1–4 carbon atoms in each alkyl group and 1–4 carbon atoms in the alkyl chain, monohydroxyalkyl having 1–4 carbon atoms, dihydroxyalkyl having 1–4 carbon atoms, cycloalkylalkyl having 3–7 carbon atoms in the cycloalkyl group and 1–4 carbon atoms in the open alkyl chain, carbamoylalkyl having 1–4 carbon atoms in the alkyl chain or N,N-dialkylcarbamoylalkyl having 1–4 carbon atoms in each alkyl group and 1–4 carbon atoms in the alkyl chain; and

Ar is phenyl, monosubstituted phenyl or disubstituted phenyl wherein each substituent group is halogen, alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms.

4,435,400

AMINO AND ALKYLAMINOALKENOATE ESTER DERIVATIVES OF AMINOCHLORONITROPYRAZINE

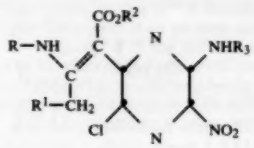
George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 19, 1982, Ser. No. 399,615

Int. Cl.³ C07D *241/16, 241/20;* A01K *31/495*

U.S. Cl. 424—250 8 Claims

1. An aminoalkenoate ester of 2-amino(or alkanoylamino)-5-chloro-3-nitropyrazine compound having the formula:



I

where

R, R^1 and R^2 may be the same or different and are each selected from the group consisting of hydrogen, C_{1-6}alkyl, C_{1-6} mono-to tetrahydroxyalkyl, or C_{1-6}aminoalkyl;

R^3 is selected from the group consisting of hydrogen and lower C_{1-6}alkanoyl;

and acid addition salts thereof.

4,435,401

4-AMINO-6,7-DIMETHOXY-2-(4-HETEROARYL-PIPERAZINO)QUINAZOLINE ANTIHYPERTENSIVES

Simon F. Campbell, Deal, and Rhona M. Plews, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

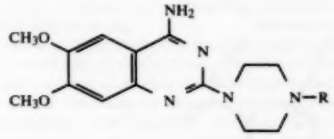
Filed Dec. 23, 1981, Ser. No. 333,672

Claims priority, application United Kingdom, Dec. 29, 1980, 8041411

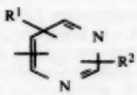
Int. Cl.³ A61K *31/505, 31/38;* C07D *403/14, 417/14*

U.S. Cl. 424—251 9 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R is of the formula



wherein R^1 is hydrogen and R^2 is 6,7-dimethoxy-1,2,3,4-tetrahydroisoquinolin-2-yl, or R^1 and R^2 are each a member selected from the group consisting of hydrogen, hydroxy, F, Cl, Br, I, (alk)R^3, O(alk)R^3, S(alk)R^3, NR^4R^5, $C_6H_4R^6$ and $OC_6H_4R^6$, where (alk) is (C_1–C_4) alkylene, R^3 is hydrogen or $C_6H_4R^6$, when taken separately, R^4 is hydrogen or (C_1–C_4) alkyl and R^5 is hydrogen, phenyl, (alk)R^3 or (C_3–C_7) cycloalkyl, or R^4 and R^5 taken together with the nitrogen atom to which they are attached form a pyrrolo, piperidino, 4-methylpiperazino, morpholino or thiomorpholino group and R^6 is hydrogen, F, Cl, Br, I, (C_1–C_4) alkyl or (C_1–C_4) alkoxy.

8. A method for treating mammalian hypertension which comprises orally or parenterally administering to a mammal in need of such treatment an antihypertensive effective amount of a compound according to claim 1.

4,435,402

AMINOPYRIMIDINE DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AND FUNGICIDAL, INSECTICIDAL AND ACARICIDAL COMPOSITIONS CONTAINING THEM

Hideakira Tsuji; Shinjiro Yamamoto; Kazuto Nakagami, all of Shiga; Takeo Honda, Ube; Katsutoshi Fujii, Ube; Takashi Kobayashi, Ube; Tokio Obata, Ube; Mikio Kojima, Ube, and Yuji Akiyoshi, Ube, all of Japan, assignors to Sankyo Company, Limited, Tokyo and Ube Industries, Limited, Ube, both of, Japan

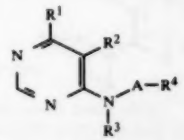
Filed Jan. 22, 1982, Ser. No. 341,776

Claims priority, application Japan, Jan. 29, 1981, 56-11979; Apr. 21, 1981, 56-60178

Int. Cl.³ C07D *239/42;* A01N *43/54*

U.S. Cl. 424—251 53 Claims

1. A fungicidal, insecticidal or acaricidal composition comprising an effective amount of a compound having the formula (I)



(I)

wherein:

R^1 and R^2 are the same or different and are each selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms and halogen atoms, or R^1 and R^2 jointly represent a trimethylene or tetramethylene group;

R^3 is selected from the group consisting of a hydrogen atom and alkyl groups having from 1 to 6 carbon atoms;

A is an alkylene group; and

R^4 is selected from the group consisting of:

an unsubstituted phenyloxy group,

a substituted phenyloxy group substituted with at least one substituent selected from the group consisting of alkyl groups, halogen atoms, alkoxy groups having from 1 to 6 carbon atoms, alkylthio groups having from 1 to 6 carbon atoms, alkenyl groups having from 2 to 6 carbon atoms, a trifluoromethyl group and a nitro group,

an unsubstituted benzyloxy group,

a substituted benzyloxy group substituted in the phenyl ring with at least one substituent selected from the group consisting of alkyl groups, halogen atoms, alkoxy groups having from 1 to 6 carbon atoms, alkylthio groups having from 1 to 6 carbon atoms, alkenyl groups having from 2 to 6 carbon atoms, a trifluoromethyl group and a nitro group,

an unsubstituted phenyl group,

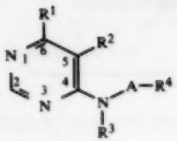
a substituted phenyl group substituted with one or two substituents selected from the group consisting of halogen atoms, alkyl groups having from 1 to 6 carbon atoms and alkoxy groups having from 1 to 6 carbon atoms,

a furyl group, and

a thienyl group

or a salt thereof, together with a carrier.

37. A compound having the formula (I)



(I)

wherein

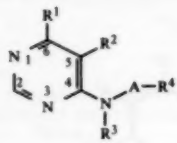
R^1 and R^2 are each methyl;

R^3 is selected from the group consisting of a hydrogen atom and alkyl groups having from 1 to 4 carbon atoms;

A is an alkylene group having 1 to 5 carbon atoms;

R^4 is the group $—OR^5$, and R^5 is selected from the group consisting of an unsubstituted phenyl group, and a substituted phenyl group substituted with one, two or three substituents selected from the group consisting of alkyl groups having from 1 to 10 carbon atoms, halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, alkenyl groups having from 3 to 4 carbon atoms, a trifluoromethyl group and a nitro group; and acid addition salts thereof.

38. A compound having the formula (I)



(I)

wherein

R^1 is an alkyl group having from 1 to 4 carbon atoms;

R^2 is chlorine or bromine;

A is an alkylene group having 1 to 5 carbon atoms;

R^4 is the group $—OR^5$, and R^5 is selected from the group consisting of an unsubstituted phenyl group, and a substituted phenyl group substituted with one, two or three substituents selected from the group consisting of alkyl groups having from 1 to 10 carbon atoms, halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, alkenyl groups having from 3 to 4 carbon atoms, a trifluoromethyl group and a nitro group; and acid addition salts thereof.

4,435,403

PHARMACOLOGICALLY ACTIVE 3-SUBSTITUTED BETA-CARBOLINES

Claus T. Braestrup, Gentofte; Jogen A. Christensen, Virum; Mogens Engelstoft, Vaerloese, all of Denmark; Günter Neef, Berlin, Fed. Rep. of Germany; Ulrich Eder, Berlin, Fed. Rep. of Germany; Ralph Schmiechen, Berlin, Fed. Rep. of Germany; Andreas Huth, Berlin, Fed. Rep. of Germany; Dieter Rahtz, Berlin, Fed. Rep. of Germany; Dieter Seidelmann, Berlin, Fed. Rep. of Germany; Wolfgang Kehr, Berlin, Fed. Rep. of Germany, and Dieter Palenschat, Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

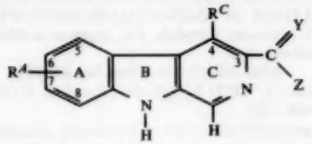
Filed Dec. 17, 1981, Ser. No. 331,740

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3048318

Int. Cl.³ C07D *487/14*; A61K *31/44*

U.S. Cl. 424—256 **7 Claims**

1. A beta-carboline of the formula



wherein

R^4 is OR^{18} wherein R^{18} is aryl or aralkyl each of up to 12 C-atoms and wherein each compound may contain 1–4 identical or different non-H R^4 groups;

R^C is hydrogen, lower alkyl, alkoxyalkyl of up to 6 C-atoms, cycloalkyl of 3–6 C-atoms, or $(CH_2)_nOR^{20}$ wherein R^{20} is alkyl of up to 6 C-atoms, or cycloalkyl of 3–6 C-atoms and n is an integer of 1 to 3;

Y is oxygen;

Z is alkoxy or aralkoxy each of up to 10 C-atoms.

7. A method of achieving a tranquilizing effect in a patient in need of such treatment which comprises administering to the patient an amount of a compound of claim **1** effective as a tranquilizer.

4,435,404

CARBOSTYRIL DERIVATIVES

Takao Nishi; Tatsuyoshi Tanaka, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP80/00122, § 371 Date Apr. 30, 1981, § 102(e) Date Apr. 30, 1981, PCT Pub. No. WO81/02421, PCT Pub. Date Sep. 3, 1981

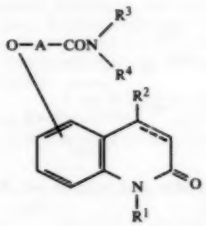
PCT Filed Jun. 4, 1980, Ser. No. 261,177

Claims priority, application Japan, Feb. 29, 1980, 55-25658

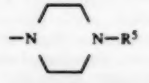
Int. Cl.³ A61K *31/47*; C07D *215/22*

U.S. Cl. 424—258 **27 Claims**

1. A carbostyril derivative or its salt represented by the general formula (1),

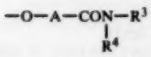


wherein R^1 is a hydrogen atom; R^2 is a hydrogen atom or a C_{1-6}-alkyl group; A is a C_{1-6}-alkylene group; R^3 is a hydroxy C_{1-6}-alkyl group having one to three hydroxy groups as the substituent, a C_{1-6}-alkoxy-C_{1-6}-alkyl group, a C_{1-6}-alkanoyloxy-C_{1-6}-alkyl group, or a benzoyloxy-C_{1-6}-alkyl group; R^4 is a C_{3-10}-cycloalkyl group which may have 1 to 3 hydroxy groups as the subsitituent in the cycloalkyl ring, or a C_{3-10}-cycloalkyl-C_{1-6}-alkyl group; further R^3, R^4 and the adjacent nitrogen atom, as well as with another nitrogen atom, may form a group of the formula



wherein R^5 is a phenyl group, a C_{3-10}-cycloalkyl group or a phenyl-C_{1-6}-alkyl group; the carbon-carbon bond between the three and four positions in the carbostyril skeleton is a single or

double bond; and the substituted position of the group of the formula



is either the 5- or 6-position in the carbostyril skeleton.

27. A pharmaceutical composition used for the prevention and treatment of thrombosis containing an effective amount of the carbostyril derivative represented by the general formula (1) or its salt of claim 1.

4,435,405
QUINOLINE DERIVATIVES WHICH ARE 5-HYDROXYTRYPTAMINE ANTAGONISTS

Thomas P. Blackburn, Congleton; Barry Cox, Chorltonville; Allen J. Guildford, Sandbach; David J. Le Count, Congleton; Robert J. Pearce, Wilmslow, and Craig W. Thornber, Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

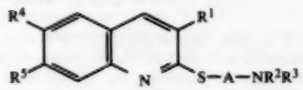
Filed May 26, 1982, Ser. No. 382,116

Claims priority, application United Kingdom, Jun. 9, 1981, 8117642

Int. Cl.³ A61K *31/47*; C07D *215/36*

U.S. Cl. 424—258 **7 Claims**

1. A quinoline derivative of the formula:



I

wherein:

A is a member selected from the group consisting of the radical $-(CH_2)_2-$, the radical $-(CH_2)_2-$ which is substituted by not more than two (1-2C)alkyl radicals, and the radical $-(CH_2)_2-$ which is substituted by an alkylene radical so as to form, together with the residue of the $-(CH_2)_2-$ radical, a cycloalkylene radical of not more than 6 carbon atoms;

R^1 is a member selected from the group consisting of n-, iso- and s-(3-4C)alkyl, cyclopropyl and phenyl; and phenyl which bears not more than two substituents selected from the group consisting of halogen, hydroxy, (1-4C)alkyl, (1-4C)alkoxy, (1-4C)alkylthio, (1-2C)perfluoroalkyl, cyano, carboxy, (1-2C)alkoxy-carbonyl, carbamoyl, N-[(1-3C)alkyl]carbamoyl and N,N-di-[(1-3C)alkyl]carbamoyl; and furyl, thienyl, pyridyl, thiazolyl or oxazolyl, any of which may optionally be substituted by (1-2C)alkyl;

R^2 is a member selected from the group consisting of hydrogen, methyl and ethyl, and dimethylene, trimethylene or tetramethylene which is linked to one or other of the carbon atoms forming the two-carbon-atom-backbone of radical A so as to form, together with the adjacent nitrogen atom, a pyrrolidinyl or piperidyl radical;

R^3 is a member selected from the group consisting of hydrogen, methyl and ethyl; and

one or R^4 and R^5 stands for hydrogen, and the other is a member selected from the group consisting of hydrogen, halogen atoms, (1-3C)alkyl and (1-3C)alkoxy;

or a pharmaceutically-acceptable acid-addition salt thereof.

6. A pharmaceutical composition for use as a 5-hydroxytryptamine antagonist comprising an effective amount of a quinoline derivative of the formula I, wherein A, R^1, R^2, R^3, R^4 and R^5 have the meanings stated in claim 1, or a pharmaceutically-acceptable acid-addition salt thereof, and an inert pharmaceutically-acceptable diluent or carrier.

7. The method of inhibiting the activity of 5-hydroxytryptamine in warm-blooded animals which comprises administering to such animals an effective amount of a compound according to claim 1.

4,435,406
IMIDAZOLE DERIVATIVES

Anna Krasso, Basel, and Henri Ramuz, Birsfelden, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

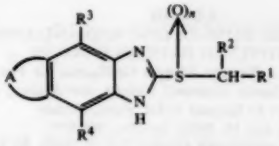
Filed Aug. 5, 1981, Ser. No. 290,032

Claims priority, application Switzerland, Aug. 21, 1980, 6321/80

Int. Cl.³ C07D *491/14*; A61K *31/44*

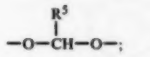
U.S. Cl. 424—263 **11 Claims**

1. A tricyclic imidazole of the formula



I

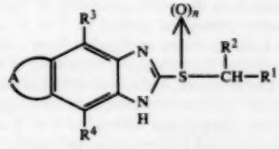
wherein R^1 is 2-pyridyl optionally substituted by lower alkyl or lower alkoxy, n is the integer 0 or 1, R^2 is hydrogen or lower alkyl, R^3 and R^4, independently, are hydrogen or lower alkyl, A is a group of the formula



and R^5 is hydrogen or lower alkyl,

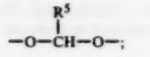
or a pharmaceutically acceptable acid addition salt thereof.

11. A method of preventing gastric ulcers which comprises administering orally or parenterally to a mammal in need of such treatment an effective amount of a compound of the formula



I

wherein R^1 is 2-pyridyl optionally substituted by lower alkyl or lower alkoxy, n is the integer 0 or 1, R^2 is hydrogen or lower alkyl, R^3 and R^4, independently, are hydrogen or lower alkyl, A is a group of the formula



and R^5 is hydrogen or lower alkyl or a pharmaceutically acceptable acid addition salt thereof.

4,435,407
CERTAIN SUBSTITUTED β-OXO-α-CARBAMOYLPYRROLEPROPIONITRILES

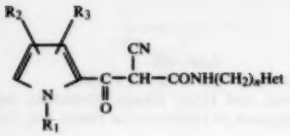
Gordon N. Walker, Morristown, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 7, 1982, Ser. No. 337,897

Int. Cl.³ C07D *401/12*; A61K *31/44*

U.S. Cl. 424—263 **8 Claims**

1. A compound of the formula



(I)

or a tautomer thereof wherein R_1, R_2 and R_3 independently represent hydrogen or lower alkyl; n represents 0 or 1; Het represents pyridyl, unsubstituted or mono or disubstituted by lower alkyl, lower alkoxy, halogen, hydroxy or trifluoromethyl; a pharmaceutically acceptable salt thereof.

4,435,408

DOPAMINERGIC STIMULATING AND ANTIANOXIC 4-SUBSTITUTED 2H-INDOLE-2-ONES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Le Pre Saint Gervais, and Claude Dumont, Nogent sur Marne, all of France, assignors to Roussel Uclaf, Paris, France

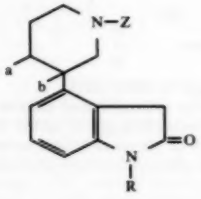
Filed Jul. 15, 1982, Ser. No. 398,576

Claims priority, application France, Jul. 24, 1981, 81 14429

Int. Cl.³ A61K *31/44, 31/445;* **C07D** *401/04*

U.S. Cl. 424—263 **15 Claims**

1. A compound selected from the group consisting of 2H-indole-2-ones of the formula



I

wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms, a and b are both hydrogen or together form a carbon-carbon bond, Z is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, hydroxyalkyl of 2 to 8 carbon atoms, aryloxyalkyl of 7 to 12 carbon atoms, cycloalkylalkyl of 4 to 12 carbon atoms, alkenyl and alkynyl of 3 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms optionally substituted with at least one member of the group consisting of halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, —OH, $—CF_3$, $—OCF_3$, $—NO_2$ and $—NH_2$ and their non-toxic, pharmaceutically acceptable acid addition salts.

11. A method of inducing dopaminergic stimulating and antianoxic activity in warm-blooded animals comprising administering to warm-blooded animals a dopaminergic stimulating and antianoxically effective amount of at least one compound of claim **1**.

4,435,409

METHOD OF STIMULATING PRODUCTION OF IGM ANTIBODIES

Mitchell J. Leibowitz, West Nyack, N.Y.; Ah S. Kong, Westfield, N.J.; Paula Sonnino-Goldman, Stamford, Conn., and Peter Wolf, Granite Springs, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,160

Int. Cl.³ A61K *31/455*

U.S. Cl. 424—266 **6 Claims**

1. A method of stimulating production of IgM antibodies in a mammal in need of such IgM antibodies comprising: the administering to said mammal an effective amount of nifedipine to stimulate production of IgM antibodies.

4,435,410

3-[2-(3-ALKYL AND ALKENYL-4-PIPERIDYL)-ETHYL]-INDOLES FOR INHIBITING SEROTONIN UPTAKE AND FOR RELEASING SEROTONIN

Gerard R. Le Fur, Plessis Robinson, and Christian L. A. Renault, Taverny, both of France, assignors to Pharmindustrie, Gennevilliers, France

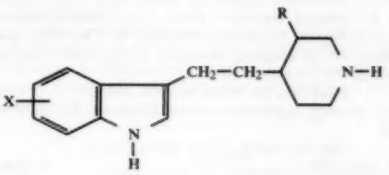
Filed May 3, 1982, Ser. No. 374,366

Claims priority, application France, May 22, 1981, 81 10219

Int. Cl.³ A61K *31/445;* **C07D** *401/06*

U.S. Cl. 424—267 **7 Claims**

1. A compound of the formula:



(II)

in which X represents hydrogen or halogen, and R represents alkyl having 1 to 3 carbon atoms or alkenyl having 2 to 3 carbon atoms.

7. A method of treating a mammal afflicted with depression or migraine conditions or to prevent the formation of arterial thrombi, which comprises administering to said mammal a therapeutically effective amount of a composition containing a compound according to claim **1** or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier therefor.

4,435,411

COMBATING FUNGI WITH 1-PHENYL-2-(1,2,4-TRIAZOL-1-YL)-PROP-2-EN-1-ONES

Wolf Reiser; Hans-Ludwig Elbe, both of Wuppertal; Karl Büchel, Burscheid; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

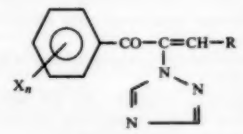
Filed Apr. 30, 1981, Ser. No. 259,304

Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019045

Int. Cl.³ A01N *43/64;* **C07D** *249/08;* **C07F** *1/08*

U.S. Cl. 424—269 **10 Claims**

1. A 1-phenyl-2(1,2,4-triazol-1-yl)-prop-2-en-1-one of the formula



in which

R is phenylacetylene,

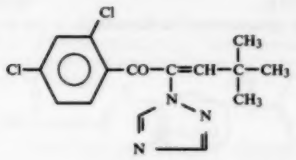
X is halogen, or phenyl or phenoxy either of which may optionally carry one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms and halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, and

n is 0, 1, 2 or 3,

or an addition product thereof with a physiologically acceptable acid or a metal salt.

5. A fungicidal composition comprising a fungicidally effective amount of a compound of addition product thereof according to claim 1 in admixture with a diluent.

8. 1-(2,4-Dichlorophenyl)-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-pent-2-en-1-one of the formula



or an addition product thereof with a physiologically acceptable acid or a metal salt.

9. A fungicidal composition comprising a fungicidally effective amount of a compound or addition product thereof according to claim 8 in admixture with a diluent.

4,435,412
5R,6S,8R-2-(1-METHYL-2-IMIDAZOLYLMETHYLTHIO)-6-(1-HYDROXYETHYL)PENEM-3-CARBOXYLIC ACID

Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Patrick A. Pinto, Mine Hill, and Richard W. Versace, Ringwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 445,295, Nov. 29, 1982. This application Jan. 17, 1983, Ser. No. 458,511

Int. Cl.³ C07D *501/36;* **A61K** *31/425*

U.S. Cl. 424—270 **15 Claims**

1. 5R,6S,8R-2-(1-methyl-2-imidazolylmethylthio)-6-(1-hydroxyethyl)penem-3-carboxylic acid and the pharmaceutically acceptable salts and esters thereof.

4,435,413
(5R-6S,8R)-6-(1-HYDROXYETHYL)-2-(2-GLYCYLAMINOETHYLTHIO)-PENEM-3-CARBOXYLIC ACID

Stuart W. McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jan. 28, 1983, Ser. No. 461,845

Int. Cl.³ A61K *31/425;* **C07D** *499/00*

U.S. Cl. 424—270 **12 Claims**

1. (5R,6S,8R)-2-6-(1-hydroxyethyl)-2-(2-glycylaminoethylthio)penem-3-carboxylic acid and the pharmaceutically acceptable salts and esters thereof.

8. An antibacterially effective pharmaceutical composition comprising an antibacterial effective amount of a compound of claim 1 in admixture with a pharmaceutically acceptable carrier therefor.

4,435,414
INJECTABLE PENICILLIN COMPOSITION

Michael J. Greenway, Worthing, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 210,603, Nov. 26, 1980. This application Aug. 23, 1982, Ser. No. 410,328

Claims priority, application United Kingdom, Nov. 27, 1979, 7940833

Int. Cl.³ A61K *31/43, 31/74*

U.S. Cl. 424—271 **7 Claims**

1. A pharmaceutical composition, which on reconstitution with water yields an injectable solution, of enhanced solubility at higher injection strengths and lower temperatures, which comprises, in the respective weight ratio range of 10:1 to 1:5,

(a) sodium dicloxacillin, and

(b) polyethylene glycol or propylene glycol having a molecular weight in the range of 180–7000.

4,435,415
N-ARYL OXAZOLIDINONES, OXAZOLIDINETHIONES, PYRROLIDINONES, PYRROLIDINES AND THIAZOLIDINONES

Guy R. Bourgery, Colombes; Colette A. Douzon, Paris; Jean-Francois R. Ancher, Rueil-Malmaison; Alain P. Lacour, La Varenne; Patrick G. Guerret, Rueil-Malmaison; Michel Langlois, Buc, and Philippe L. Dostert, Le Vesinet, all of France, assignors to Delalande S.A., Courbevoie, France

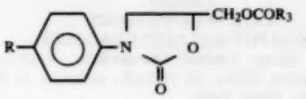
Division of Ser. No. 45,143, Jun. 4, 1979, Pat. No. 4,348,393. This application Jun. 16, 1982, Ser. No. 389,136

Claims priority, application France, Jun. 9, 1978, 78 17388; Aug. 17, 1978, 78 24024

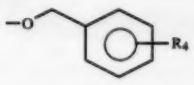
Int. Cl.³ A61K *31/42;* **C07D** *263/14, 263/24*

U.S. Cl. 424—272 **8 Claims**

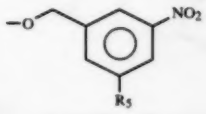
1. A compound having the formula



in which R_3 is selected from the group consisting of alkyl having 1 to 8 carbon atoms, cyclohexyl, phenyl, methoxymethyl and phenoxymethyl, and R is selected from the group consisting of n-butoxy, 3-methylbutoxy, cyclopentylmethoxy, cyclohexylmethoxy, 2-cyanoethoxy, cyanomethoxy,



in which R_4 is hydrogen, m—Cl, m—F, p—F, m—CN or m—NO_2, and



in which R_5 is Cl or CN.

4,435,416
FUNGICIDAL AND ALGICIDAL 1-METHYL-3,4-DIHALO-5-SUBSTITUTED THIO-, SULFOXYL-, OR SULFONYL-PYRAZOLES

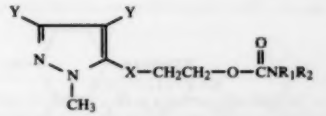
Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1982, Ser. No. 393,213

Int. Cl.³ A01N *43/56;* **C07D** *231/18*

U.S. Cl. 424—273 P **18 Claims**

1. A compound of the formula:



wherein Y is chloro or bromo; X is —S—, —SO—, or —SO_2—; and R_1 and R_2 are independently hydrogen, alkyl having from 1 to 8 carbon atoms, cycloalkyl having up to 6 carbon atoms, lower alkenyl of 3 to 6 carbon atoms, alkylene carbalkoxy having a total of 3 to 4 carbon atoms, or aryl or aralkyl having from 6 to 10 carbon atoms

optionally substituted with one or two substituents, each independently selected from the group consisting of halogen, nitro, cyano, lower alkyl having from 1 to 6 carbon atoms, lower alkoxy having from 1 to 6 carbon atoms, trihalo-substituted methyl and phenoxy.

7. A method for controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of the formula defined in claim 1.

4,435,417
ANTIINFLAMMATORY 3H-NAPHTHO[1,2-D]IMIDAZOLES

Emilio Toja, Milan; Amedeo Omodei-Sale', Voghera, and Domenica Selva, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

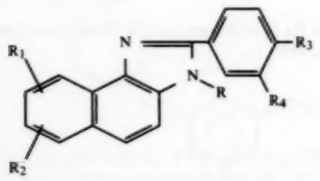
Continuation of Ser. No. 236,473, Feb. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,490, Dec. 17, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,653

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.[3] **A61K** *31/415;* **C07D** *235/18*

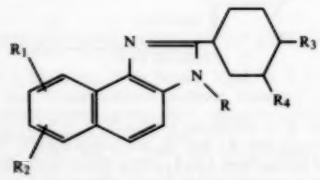
U.S. Cl. 424—273 B **15 Claims**

1. A 3H-naphtho[1,2-d]imidazole derivative having the following formula



wherein R stands for (C_{1-6})alkyl, (C_{3-6})alkenyl, (C_{3-6})alkynyl or (C_{3-7})cycloalkyl, R_1 and R_2 each independently may represent hydrogen, halogen (C_{1-4})alkyl, (C_{1-4})alkylthio, (C_{1-4})alkoxy or halo(C_{1-4})alkoxy, R_3 stands for hydrogen, methoxy, ethoxy or mono- or di-methylamino, and R_4 represents hydrogen or (C_{1-4})alkyl with the proviso that when simultaneously R stands for an ethyl radical, one of R_1 and R_2 is hydrogen and the other one is a methoxy group and R_4 is hydrogen, R_3 cannot be a dimethylamino group; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

13. A method for relieving antiinflammatory diseases in animals which comprises administering to an animal in need thereof an amount comprised between about 0.05 to about 10.00 g per day of a compound of formula I



wherein R, R_1, R_2, R_3, and R_4 are as defined in claim 1 or a salt therewith of a pharmaceutically acceptable acid.

4,435,418
5-PHENYLETHENYLBENZIMIDAZOLES

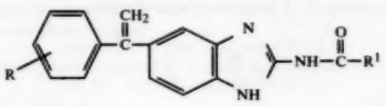
Alfred W. Chow, Radnor, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 13, 1982, Ser. No. 449,350

Int. Cl.[3] **A01N** *43/52;* **C07D** *235/30, 235/32*

U.S. Cl. 424—273 B **14 Claims**

1. A chemical compound of the formula:

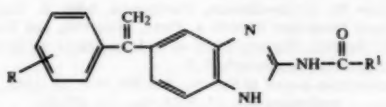


in which:

R is hydrogen, halo, methyl, methoxy or methylthio; and

R^1 is lower alkyl of 1–4 carbons, cycloalkyl of 3–4 ring members or lower alkoxy of 1–4 carbons.

10. The method of producing anthelmintic activity in hosts infected with, or susceptible to, helminthic infections comprising administering orally to said hosts an anthelmintic, but non-toxic, quantity of a compound of the formula:



in which:

R is hydrogen, halo, methyl, methoxy or methylthio; and

R^1 is lower alkyl of 1–4 carbons, cycloalkyl of 3–4 ring members or lower alkoxy of 1–4 carbons.

4,435,419
METHOD OF TREATING DEPRESSION USING AZABICYCLOHEXANES

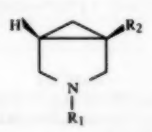
Joseph W. Epstein, Monroe; Arnold C. Osterberg, Pearl River, and Herbert J. Brabander, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 279,366, Jul. 1, 1981, abandoned. This application May 10, 1982, Ser. No. 376,131

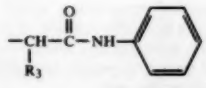
Int. Cl.[3] **A61K** *31/40;* **C07D** *209/52*

U.S. Cl. 424—274 **24 Claims**

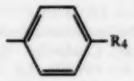
1. A compound selected from the group consisting of an optically active compound of the formula:



the mirror image isomer thereof, the racemic mixture of the optical isomers and the pharmacologically acceptable acid addition salts thereof wherein R_1 is hydrogen or a moiety of the formula:



wherein R_3 is alkyl(C_1–C_3), R_2 is 3,4-methylenedioxyphenyl or a moiety of the formula:



wherein R_4 is chloro, bromo, alkanoyl(C_2–C_4), alkylamino (C_1–C_3), dialkylamino(C_1–C_3), hydroxymethyl, benzyl or benzoyl with the proviso that when R_1 is hydrogen then R_4 may not be halogen.

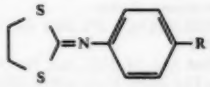
4,435,420

ANTI-INFLAMMATORY AGENTS AND ANTIASTHMATIC AGENTS

Boyd L. Harrison, and Niall S. Doherty, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

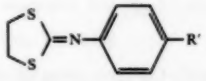
Filed Apr. 12, 1982, Ser. No. 367,510
Int. Cl.³ A61K *31/385;* **C07C** *339/06*
U.S. Cl. 424—277 **12 Claims**

1. A method of treating asthma which comprises administering to a patient in need thereof an effective antiasthmatic amount of a compound of the formula:



wherein R is alkyl of 1–10 carbon atoms or cycloalkyl of 5–7 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

9. A compound of the formula:



wherein R′ is alkyl of 6–8 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

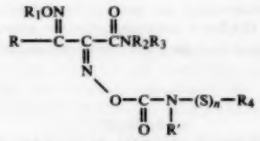
4,435,421

BIOCIDAL SULFUR-CONTAINING BIS-IMINO CARBAMATE COMPOUNDS

Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 3, 1978, Ser. No. 957,561
Int. Cl.³ A61K *31/385, 31/21, 31/335;* **C07C** *83/10*
U.S. Cl. 424—277 **56 Claims**

1. A compound of the formula:



wherein:

n = 1 or 2;

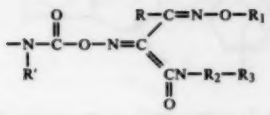
R, R′, R_1, R_2, and R_3 are individually alkyl groups of one to four carbon atoms;

R_4 is:

(a) C_1–C_{18} alkyl, C_3–C_8 cycloalkyl, or dialkylamino group; or

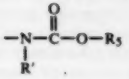
(b) a phenyl group which may be unsubstituted or substituted with one or more alkyl, chloro, fluoro, cyano, nitro, alkoxy, trifluoromethyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxyalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl or dialkylamino groups; or

(c) a group of the formula:



A.

B.



C.

wherein:

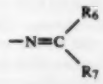
R_5 is:

(1) an alkyl, alkoxyalkyl, or phenylalkyl group; or

(2) a phenyl group which may be unsubstituted or substituted with one or more C_1–C_{12} alkyl, chloro, fluoro, alkoxy, alkylthio, alkylthioalkyl, alkylsulfinyl, alkylsulfinylalkyl, alkylsulfonyl, alkylsulfonylalkyl, alkynyloxy, dialkylamino, alkoxyamino, formamidino, cyano, dioxolanyl or dithiolanyl groups in any combination; or

(3) a naphthyl or tetrahydronaphthyl, group all of which may be unsubstituted or substituted with one or more alkyl groups; or

(4) a group of the formula:



wherein:

R_6 is a chloro, alkyl, alkylthio, cyanoalkylthio, amidoalkylthio or cyano group; or R_6 is hydrogen provided R_7 is not hydrogen;

R_7 is an alkyl, alkylthio, alkoxycarbonyl aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxyalkyl, nitroalkyl, hydroxyalkyl, or phenyl group, said phenyl group may be unsubstituted or substituted with one or more alkyl, chloro, or fluoro groups in any combination; or R_7 is hydrogen, provided R_6 is not hydrogen;

provided that except when R_4 is an alkyl group or when R_5 is a phenyl group substituted with an alkyl group, no single alkyl or alkylene moiety in any R_4, R_5, R_6, or R_7 group may include more than eight carbon atoms.

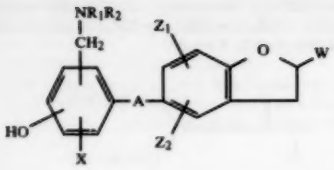
4,435,422

5-SUBSTITUTED 2,3-DIHYDROBENZOFURAN-2-CARBOXYLIC ACIDS AND THEIR USE IN DIURETIC COMPOSITIONS

Cheuk M. Lee, Libertyville, and James A. Parks, North Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

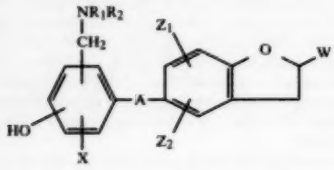
Filed Sep. 15, 1982, Ser. No. 418,321
Int. Cl.³ A61K *31/34;* **C07D** *307/85*
U.S. Cl. 424—285 **31 Claims**

1. A compound of the formula



wherein R_1 and R_2 independently of one another denote hydrogen or loweralkyl; A is CO, CH_2, O, S, SO or CHOH; X is hydrogen, halo, loweralkyl, or $—CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; W is COOR wherein R is hydrogen or alkyl of 1–10 carbon atoms, CH_2OH, $CONR_1R_2$ or $CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; and Z_1 and Z_2 independently of one another denote hydrogen, halo or loweralkyl; and pharmaceutically acceptable salts thereof.

22. A method of increasing the urinary excretion of a patient comprising administering to a patient in need of such treatment a therapeutically effective amount of a diuretic agent of the formula



wherein R_1 and R_2 independently of one another denote hydrogen or loweralkyl; A is CO, CH_2, O, S, SO or CHOH; X is hydrogen, halo, loweralkyl, or $—CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; W is COOR wherein R is hydrogen or alkyl of 1–10 carbon atoms, CH_2OH, $CONR_1R_2$ or $CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; and Z_1 and Z_2 independently of one another denote hydrogen, halo or loweralkyl; and pharmaceutically acceptable salts thereof.

4,435,423

ANTI-ULCER COMPOSITION COMPRISING TERPENOID CONTAINING TWO FUNCTIONAL GROUPS AND METHOD OF TREATING ULCERS

Akio Sato, Yatabe; Kenji Nakajima, Sakuramura; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Noriaki Kuwana, Aichi; Shinya Abe, Kawagoe, and Kouzi Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and General Director of the Agency of Industrial Science and Technology, Seiichi Ishizaka, both of Tokyo, Japan

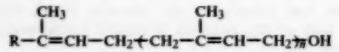
Division of Ser. No. 221,163, Dec. 29, 1980, Pat. No. 4,338,251. This application Mar. 22, 1982, Ser. No. 360,722

Claims priority, application Japan, Jan. 12, 1980, 55-2395

Int. Cl.³ A61K *31/20, 31/11, 31/045*

U.S. Cl. 424—318 **9 Claims**

1. A method for treatment of ulcers comprising administering to a subject requiring such treatment a therapeutically effective amount of a pharmaceutical composition containing an effective anti-ulcer amount of a compound having the formula:



in which n is an integer of from 1 to 5, and R is hydroxymethyl, formyl or carboxyl, and a pharmacologically acceptable carrier.

4,435,424

PROCESS FOR IMPROVING VIGOR AND MOOD IN NORMAL HUMAN PATIENTS

Richard J. Wurtman, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 169,001, Jul. 15, 1980, abandoned, which is a continuation of Ser. No. 66,158, Aug. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 898,740, Apr. 24, 1978, abandoned. This application Aug. 31, 1981, Ser. No. 297,623

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **1 Claim**

1. The process for improving vigor in a human patient who lacks vigor associated with a deficiency of catecholamines in synapses which comprises administering to the patient a neutral amino acid containing tyrosine in an amount effective to regulate blood plasma levels of tyrosine to form corresponding amounts of catecholamines released in synapses in the brain.

4,435,425

FLUORINATED DIAMINOBUTANE DERIVATIVES

Albert Sjoerdsma, Cincinnati, Ohio; Philippe Bey, Strasbourg; Michel Jung, Illkirch-Graffenstaden, both of France; Fritz Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany, and Daniel Schirlin, Hoenheim, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

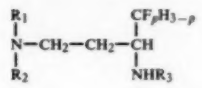
PCT No. PCT/US81/01130, § 371 Date Apr. 9, 1982, § 102(e) Date Apr. 9, 1982

PCT Filed Aug. 21, 1981, Ser. No. 373,600

Int. Cl.³ A61K *31/13;* **C07C** *87/22*

U.S. Cl. 424—325 **13 Claims**

1. A compound of the formula:



wherein:

R_1 is hydrogen, C_1–C_6alkyl or phenyl-(C_1–C_4alkyl);

R_2 is hydrogen, C_1–C_6alkyl, phenyl-(C_1–C_4alkyl), or R_4, where R_4 is as defined below;

R_3 is hydrogen or, except when R_2 is R_4, R_4, where R_4 is as defined below;

each R_4, independently, is C_2–C_5alkylcarbonyl, phenylcarbonyl, phenyl-(C_1–C_4alkyl)carbonyl, or an aminocarboxylic acid residue derived by removal of an hydroxy group from the carboxy moiety of glycine or an L-aminocarboxylic acid of the formula $HOCOCH(R_9)NH_2$ or $HO—CO(CH_2)_nCH(NH_2)CO_2H$ wherein R_9 is C_1–C_4alkyl, aminopropyl, aminobutyl, benzyl, or p-hydroxybenzyl and n is 1 or 2; and

p is 1 or 2,

or a pharmaceutically acceptable acid addition salt thereof.

12. A pharmaceutical composition for inhibiting GABA-T comprising a GABA-T inhibiting effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier.

4,435,426

ETHERS OF PHENOL ACTIVE ON THE CARDIOVASCULAR SYSTEM, PROCESS FOR PREPARING SAME AND USE THEREOF IN DRUGS

Henri Demarne, and Jean Wagnon, both of Montpellier, France, assignors to Societe Anonyme dite: Sanofi, France

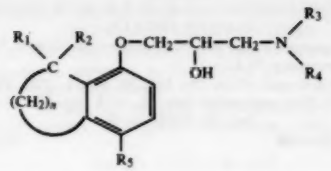
Filed May 25, 1982, Ser. No. 381,796

Claims priority, application France, Jun. 5, 1981, 81 11242

Int. Cl.³ C07C *97/10;* **A61K** *31/165*

U.S. Cl. 424—324 **22 Claims**

1. Novel products, responding to general formula:



(I)

in which:

R_1 and R_2 taken together represent an atom of oxygen =O or R_1 represents hydrogen and R_2 represents an OH radical,

R_3 designates an atom of hydrogen or a straight or branched alkyl radical having from 1 to 6 atoms of carbon,

R_4 represents a straight or branched alkyl radical having from 1 to 6 atoms of carbon, or an alkynyl group having 2 to 6 atoms of carbon,

R_5 designates an atom of hydrogen, an alkyl group having from 1 to 4 atoms of carbon or an acylamine group,

n=3 or 4;

as well as the mineral acid or organic acid addition salts of said products.

4,435,427

STABLE INJECTABLE β-CAROTENE MICELLAR SOLUTIONS AND THEIR PREPARATION

Peter P. Hoppe, Wachenheim; Joachim U. Schneider, Weisenheim; Bernhard Schulz, Schwetzingen, and Hubert Tiefenbacher, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,124

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048000

Int. Cl.³ A61K *31/015*

U.S. Cl. 424—356 **10 Claims**

1. A process for the preparation of a β-carotene micellar solution, which comprises: forming a melt having a temperature of from 160° to 180° C. of a mixture of β-carotene, an antioxidant for β-carotene and a non-ionic and water-soluble emulsifier having an HLB value of from 12 to 16 and which is capable of forming a homogeneous melt with said β-carotene, the amount of β-carotene in the melt being from 20 to 30% by weight, based on the weight of the emulsifier;

adding water to the mixture to cool the melt rapidly to a temperature below 100° C.; and thereafter,

adding additional water to the chilled mixture to form a clear micellar solution having a concentration of β-carotene of from 3 to 6% by weight.

4,435,428

USE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFF OR CHEWING GUM WITH THE METHYL CARBONATE OF 1-HYDROXYMETHYL-2-HEPTANOYL CYCLOPROPANE

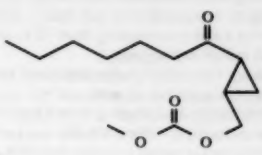
Richard M. Boden, Ocean; Marie R. Hanna, Hazlet, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,486

Int. Cl.³ A23L *1/226, 1/235*

U.S. Cl. 426—3 **1 Claim**

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of foodstuffs and chewing gums comprising the step of adding to a foodstuff or chewing gum from 0.02 parts per million up to about 50 parts per million based on the total composition of the compound having the structure:



4,435,429

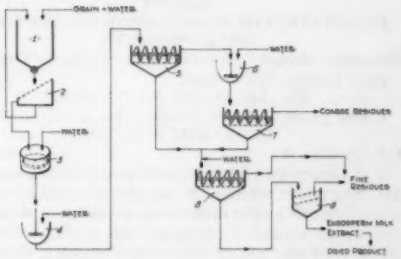
PROCESSING AQUEOUS TREATED CEREALS

Vernon D. Burrows; Royce G. Fulcher, both of Ottawa, and David Paton, Orleans, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Feb. 16, 1982, Ser. No. 349,424

Int. Cl.³ A23B *9/00*; A23L *1/10*

U.S. Cl. 426—18 **14 Claims**



1. A process for treating cereal grains to separate endospermic from non-endospermic tissues thereof, said process comprising:

(a) soaking the grains in an aqueous medium having a pH in the range 3.0–7.0 at a temperature in the range 40.0°–70.0° C. until the grains have absorbed said liquid medium in an amount at least equivalent to the weight of the grain, to substantially liquefy said endosperm portion by the action of indigenous cell wall degrading enzymes;

(b) applying pressure on the soaked grains so as to split each grain and release substantially all of the liquified endosperm; and

(c) separating liquified endosperm from non-endospermic tissues.

4,435,430

ENZYME-SACCHARIFIED ALL NATURAL, READY-TO-EAT CEREAL FROM WHOLE CEREAL GRAIN

Charles V. Fulger, Millwood, and Ernest K. Gum, Granit Springs, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 20, 1983, Ser. No. 459,422

Int. Cl.³ A23L *1/164*

U.S. Cl. 426—18 **28 Claims**

1. A process for preparing an enzyme-saccharified, ready-to-eat cereal derived from a whole cereal grain comprising:

(a) milling and separating a whole cereal grain to produce a germ fraction, a bran fraction and an endosperm fraction;

(b) processing the germ fraction by:

(i) toasting the germ fraction, and

(ii) grinding the toasted germ to a particle size of from 0.25 to 2.0 millimeters;

(c) treating the bran fraction to improve its functionality by

milling said bran fraction to a particle size of from 5 to 100 microns;

(d) processing the endosperm fraction by:

(i) milling to a practicle size less than 2 millimeters,

(ii) forming a slurry containing from 15 to 60% by weight of said milled endosperm,

(iii) cooking the milled endosperm until substantially all the starch is gelatinized, and

(iv) enzymatically hydrolyzing from 15 to 75% by weight of said endosperm to form soluble saccharides such that the ready-to-eat cereal contains from 7.5 parts sucrose-equivalent sweetness up to 50 parts sucrose-equivalent sweetness;

(e) recombing the ground, toasted germ of step (b)(ii), the milled bran of step (c) and the enzymatically hydrolyzed endosperm of step (d)(iv) to form a cereal dough containing whole grain levels of protein, fiber and digestible carbohydrates;

(f) obtaining a ready-to-eat cereal from said cereal dough.

4,435,431

ELIMINATION OF RANCID ODOR IN FERMENTED MILK PRODUCTS

Shin-ichiro Akatsuka, Saitama, Japan, assignor to Eisai Company, Limited, Tokyo, Japan

Filed Feb. 26, 1982, Ser. No. 352,871

Claims priority, application Japan, Mar. 6, 1981, 56-31204

Int. Cl.³ A23C *9/12, 19/00*

U.S. Cl. 426—36 **4 Claims**

1. A process for preventing fermented milk products from becoming rancid, which comprises adding an effective amount of a mixture of a yeast decomposed product and an albumen decomposed product to a fermented milk product, wherein the decomposed yeast and albumin are each present in the mixture in amounts sufficient to substantially eliminate the rancid odor ordinarily generated in said fermented product.

4,435,432

PROCESS FOR THE PRODUCTION OF STABLE CURDLED MILK PRODUCTS

Hans J. Klupsch, Hamm, Fed. Rep. of Germany, assignor to EVOG - Etablissement für Verwaltung und Organisation, Liechtenstein

Filed May 19, 1982, Ser. No. 379,894

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120505

Int. Cl.³ A23C *9/12, 21/06;* **C12N** *1/20;* **C12R** *1/01*

U.S. Cl. 426—43 **8 Claims**

1. A process for the production of semi-solid curdled milk products, comprising inoculating and fermenting raw milk material with a bacterial strain of *Bifidobacterium longum* CK1 1979 (DSM 2054) under conditions suitable for the formation of said semi-solid curdled milk product.

4,435,433

METHOD FOR INHIBITING NITROSAMINE FORMATION AND ELIMINATING SURFACE CHARRING DURING MEAT COOKING

Richard F. Theiler, Scottsdale, Ariz., assignor to Armour Food Company, Phoenix, Ariz.

Filed Jun. 18, 1982, Ser. No. 389,736

Int. Cl.³ A23B *4/02, 4/14*

U.S. Cl. 426—266 **23 Claims**

1. A method for inhibiting the formation of nitrosamines and substantially eliminating surface charring when cooking a nitrite-impregnated meat product, comprising the step of introducing a reducing sugar alkylated at the C-1 position into said meat product prior to said step of cooking.

4,435,434

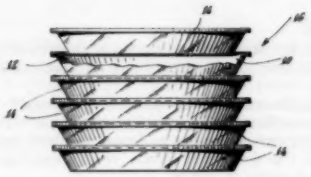
PACKAGING SYSTEM FOR FULLY BAKED, UNFILLED PASTRY SHELLS

John A. Caporaso, Ringwood, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 344,290, Feb. 1, 1982, Pat. No. 4,399,157. This application Aug. 15, 1983, Ser. No. 523,627

Int. Cl.³ B65D *85/36*

U.S. Cl. 426—108 **8 Claims**



1. A packaging system for protecting the freshness and structural integrity of a plurality of fully-baked unfilled pastry shells during shipping and storage, the system comprising:

at least one vertical stack of said fully-baked unfilled pastry shells, each individual shell being held in a conforming baking pan which is of frusto-conical construction having a supporting base member and an upper open surface, each individual shell and pan wrapped with a continuous, substantially moisture-impermeable high polymer film substantially conforming to the outer surface dimensions of said baking pan and stretched across the upper, open surface of the pastry shell so as to provide an enclosed air space substantially equal to the filling volume of the pastry shell;

said stack being arranged such that the wrapped base member of individual baking pans in the stack rests entirely upon said high polymer film stretched across the upper open surface of a shell and pan therebelow;

said high polymer film possessing sufficient strength and resiliency so as to resist breakage when the wrapped shells are stacked in said vertical stacked arrangement and such that the arrangement of wrapped shells in said vertical stack and conditions encountered in handling and shipping will not result in the portion of the film stretched across the upper open surface of any of the pastry shells being deformed or depressed to the point such that any of the individual shell and pan combinations in the vertical stack rest together in a manner whereby the wrapped base member of a baking pan actually rests against the inner surface of a film-wrapped pastry shell below it;

a high polymer film bag surrounding the stack of pastry shells; and

a corrugated shipping container enclosing the high polymer film and the stack of pastry shells.

4,435,435

RICE PASTA COMPOSITION

Jau Y. Hsu, Brookfield, Conn., assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 7, 1981, Ser. No. 327,913

Int. Cl.³ A23L *1/16*

U.S. Cl. 426—557 **12 Claims**

1. A composition comprising uncooked rice flour and, based on the weight of the uncooked rice flour, from 0 to 40% by weight of precooked rice flour, from 0.1 to 4% by weight of sodium or potassium alginate or mixture thereof and from 0.1 to 4% by weight of propylene glycol alginate wherein when the composition contains less than 5% by weight of precooked rice flour, each of the said alginates are present in an amount of at least 1% by weight.

4,435,436

ALKALIZED COCOA POWDERS AND FOODSTUFFS CONTAINING SUCH POWDERS

Johannes L. Terink, and Maurits J. Brandon, both of Zaandam, Netherlands, assignors to Cacaofabrik DeZaan B.V., Koog aan de Zaan, Netherlands

Filed Mar. 16, 1982, Ser. No. 358,763

Claims priority, application Netherlands, May 14, 1981, 8102377

Int. Cl.³ A23G *1/00, 1/02*

U.S. Cl. 426—631 **25 Claims**

1. An alkalized cocoa powder having a pH of 7.5 or less; a ratio pH: alkalinity of the ash below 0.046; color coordinates L between 9.0 and 14.0, a between 4.0 and 8.0, and b between 2.0 and 6.0; in which neither more nor other acid radicals are present than those by nature present in fermented cocoa.

4,435,437

AROMATIC CITRUS OIL CONCENTRATE WHICH IS STABLE IN STORAGE

Erich Ziegler, Draisendorfer Strasse 143, D-8551 Aufsess, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,893

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112380

Int. Cl.³ A23L *1/221, 1/28*

U.S. Cl. 426—651 **6 Claims**

1. Concentrate of natural citrus oil which retains its aroma and is stable in storage, comprising:

(a) 10 to 90 percent by weight citrus peel oil concentrate produced from cold-pressed citrus peel oil, the peel oil concentrate being obtained by subjecting the cold-pressed citrus peel oil to adsorption at a solid separating agent which adsorbs polar organic substances to thereby form an adsorbed fraction at the solid separating agent, eluting the adsorbed fraction with a polar organic eluant to form an eluate containing the adsorbed fraction, recovering the eluate, and separating the adsorbed fraction from the eluate and

(b) the remainder essence oil concentrate.

4,435,438

SOY ISOLATE SUITABLE FOR USE IN IMITATION CHEESE

William F. Lehnhardt; Charles E. Streaty, Jr., both of Decatur; Walter C. Yackel, Jr., Oreana; Ho S. Yang, and Daniel K. Tang, both of Decatur, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 388,864, Dec. 29, 1980, Pat. No. 4,349,576. This application Jun. 16, 1982, Ser. No. 388,864

Int. Cl.³ A23J *1/14;* A23C *20/00*

U.S. Cl. 426—656 **9 Claims**

1. A method for preparing a soy protein isolate suitable for use as a replacement of caseinate in imitation cheese which comprises:

(a) preparing a slurry of a defatted soybean material in water;

(b) extracting the water-soluble protein from the slurry in the presence of sulfurous ions at a temperature of about 25° to 35° C. and a pH of about 7.0 to 7.5;

(c) clarifying the extract to remove insolubles;

(d) adding acid to the clarified extract to adjust its pH to about 4.2 to 4.6 to precipitate the protein;

(e) separating the precipitated protein from the other components of the clarified extract to recover at least a major weight portion of the water-soluble protein in the clarified extract;

(f) washing the separated protein to remove substantially all of the pH 4.2 to 4.6 water-soluble components therefrom;

(g) dissolving and washed protein in water at a pH of about 7.0 to 7.5;

(h) heating the protein solution at a temperature of at least 65° C. for a period of time sufficient to impart a melt value of at least 25 cm^2 to the protein; and

(i) recovering the soy protein isolate from the solution.

4,435,439

FROZEN DESSERT

John D. Morris, 203 Buckingham Rd., Pittsburgh, Pa. 15215

Filed Jul. 7, 1982, Ser. No. 395,999

Int. Cl.³ A23G *9/02*

U.S. Cl. 426—565 **17 Claims**

1. A method for the preparation of a frozen dessert which comprises:

(a) preparing an initial mix containing the following components:

Component	Amount in Weight %
Non Fat Milk Solids	10 to 13.5
Sweetening Agent	10.5 to 13
Casein	0 to 1.10
Other solid components selected from the group consisting of stabilizers, emulsifiers, corn syrup solids, calcium salts, magnesium salts and microcrystalline cellulose	1.5 to 2.25
Water	to 100%

(b) pasteurizing the initial mix at a minimum temperature of 165° F. for a minimum time period of 30 minutes to obtain an initial mix having a viscosity at a temperature of 165° F. immediately after pasteurization in the range of about 18 to 31 seconds as measured by a Zahn cup viscosity meter with B tip;

(c) cooling the pasteurized initial mix to a temperature of not greater than 40° F.;

(d) blending the pasteurized initial mix with fruit juice concentrate to obtain a final blended composition having a viscosity at a composition temperature of 50° F. in the range of about 700 to 1400 cps as measured by a Brookfield viscometer with spindle No. 3 at 60 rpm; and

(e) freezing the final blended composition to obtain a frozen dessert.

4,435,440

SWEETENERS

Leslie Hough, Wimbledon; Shashikant P. Phadnis, Talbot Square, Riaz A. Khan, Sonning, all of England, assignors to Tate & Lyle Limited, England

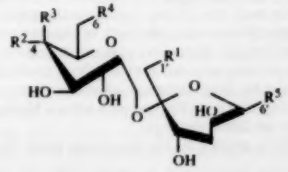
Filed Dec. 30, 1976, Ser. No. 755,661

Claims priority, application United Kingdom, Jan. 8, 1976, 616/76; May 12, 1976, 19570/76

Int. Cl.³ A23L *1/09*

U.S. Cl. 426—658 **40 Claims**

1. A method of sweetening an ingestible product or oral composition, comprising incorporating therein a compound of the general formula (I)



(I)

in which

R^1 represents a hydroxy group or a chlorine atom;

R^2 and R^3 respectively represent a hydroxy group and a

hydrogen atom, a chlorine atom and a hydrogen atom, or a hydrogen atom and a chlorine atom, the 4-position being in the D-configuration;

R^4 represents a hydroxy group; or, if at least two of R^1, R^2, R^3 and R^5 represent chlorine atoms, R^4 represents a hydroxy group or a chlorine atom; and

R^5 represents a hydroxy group or a chlorine atom;

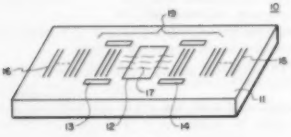
provided that at least one of R^1, R^2, and R^3 and represents a chlorine atom; in a sweetening amount.

4,435,441

METHOD OF FREQUENCY TRIMMING SURFACE ACOUSTIC WAVE DEVICES

Elio Mariani, Hamilton Square, and Arthur Ballato, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1982, Ser. No. 454,806
Int. Cl.³ B05D 3/06
U.S. Cl. 427—10 **9 Claims**



1. A method of adjusting the frequency of a piezoelectric device, having a substrate containing an active resonator element with an acoustic path, comprising the steps of:

applying a low out-gassing polymer to the substrate of the device;

partially curing the device;

sealing the device; and

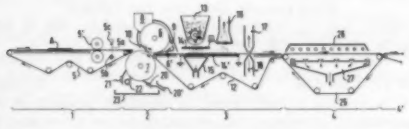
energizing the polymer.

4,435,442

METHOD AND APPARATUS FOR REINFORCING FACE FABRIC MATERIALS FOR GARMENTS

Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,656
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014656
Int. Cl.³ B05D 1/06, 1/14
U.S. Cl. 427—14.1 **24 Claims**



1. A method of reinforcing a face fabric material for a garment by a layer of flocking on the rear side of the face fabric to eliminate the need for a fixing lining for the garment, comprising the steps of imprinting the back of the material with an aqueous cross-linkable dispersion paste in a grid-like manner by an intaglio printing process, applying flock to the dispersion paste and curing by heat treatment, characterized in that:

(a) the printing step is performed with a flock binding dispersion paste on fabric cuttings:

(b) the flock is applied to the dispersion paste electrostatically;

(c) the aqueous dispersion paste is pre-stabilized by at least one technique selected from thermal coagulation and pre-drying: and

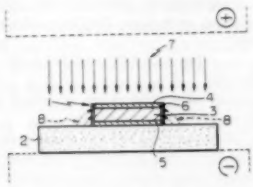
(d) a further operating stage in which the step of cross-linking the dispersion paste is carried out with a plurality of cuttings positioned to form a stack in a heated chamber at 90° to 140° C.

4,435,443

METHOD FOR FORMING A PROTECTING FILM ON SIDE WALLS OF A SEMICONDUCTOR DEVICE

Hajime Imai, Tokyo; Masahiro Morimoto, Yokohama, and Takao Fujiwara, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 223,152, Jan. 7, 1981, Pat. No. 4,356,210, which is a continuation of Ser. No. 62,415, Jul. 30, 1979, abandoned. This application Jun. 18, 1982, Ser. No. 389,916
Claims priority, application Japan, Jul. 29, 1978, 53-92777; Dec. 1, 1978, 53-148838
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ B05D 3/06; C23C 17/00
U.S. Cl. 427—38 **23 Claims**



1. A method for forming a protecting film on the side walls of a semiconductor device comprising the steps of:

forming a plurality of electrodes on at least one surface of a semiconductor substrate;

cleaving said substrate into a plurality of portions, each said portion having at least one of said electrodes;

placing said substrate portions on the surface of a substrate target made of a protecting film material so that said side walls are oriented essentially perpendicularly to said substrate target;

placing said substrate target with each said substrate portion in an atmosphere including energetic particles; and

impinging said energetic particles against said substrate target, so that particles of said protecting film material are sputtered from said substrate target and deposited on said side walls of each said substrate portion to form said protecting film, while simultaneously, said energetic particles sputter-etch the exposed ones of said electrodes and the exposed portions of said semiconductor substrate surface.

4,435,444

METHOD OF MAKING ULTRA-MICROCRYSTALLITE SILICON CARBIDE PRODUCT

William Goldberger, and A. K. Reed, both of Chicago, Ill., assignors to Superior Graphite Co., Chicago, Ill.

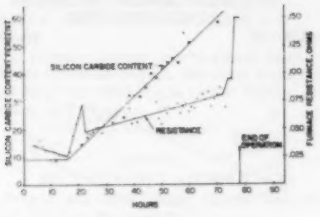
Division of Ser. No. 319,976, Nov. 10, 1981. This application Sep. 1, 1982, Ser. No. 413,613
Int. Cl.³ B05D 3/14
U.S. Cl. 427—49 **22 Claims**

1. A method of producing a silicon carbide and carbon product comprising the steps of:

mixing a substantially greater percentage of additional carbonaceous material in particulate form with a substantially lesser percentage of silicon dioxide to form a first reaction mixture;

fluidizing in an inert gaseous medium and providing electrical current to the mixture, with the electrical current sufficient to render a temperature sufficient to react the

silicon dioxide with the carbonaceous material but insufficient to decompose the formed silicon carbide and for a time sufficient to react substantially all of the silicon dioxide; and



EFFECT OF SILICON CARBIDE CONTENT ON FURNACE RESISTANCE

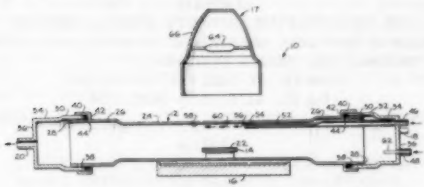
successively repeating the above steps until the electrical resistance of the reacted mixture rises asymptotically.

4,435,445

PHOTO-ASSISTED CVD

David D. Allred, Troy; Lee Walter, Bloomfield Hills; Jaime M. Reyes, Birmingham, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 13, 1982, Ser. No. 377,738
Int. Cl.³ C23C *13/00*
U.S. Cl. 427—54.1 **7 Claims**



1. A process for making an amorphous silicon and germanium alloy film comprising:

providing a gas comprising silane and germane in a deposition environment containing the substrate;

heating the substrate below the temperature required for pyrolysis of the silane and germane;

irradiating the silane and germane with radiation below an energy level required to photochemically decompose the gas; and

the combination of heat and radiation causing deposition of an amorphous silicon and germanium alloy film on the substrate.

4,435,446

EDGE SEAL WITH POLYSILICON IN LOCOS PROCESS

Alan D. Marston, Los Altos, and Lenin Anne, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 15, 1982, Ser. No. 441,593
Int. Cl.³ H01L *21/76*
U.S. Cl. 427—93 **5 Claims**

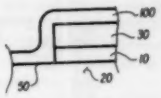
1. In a method for producing a semiconductor structure, the steps comprising:

forming a covering layer over a semiconductor substrate;

removing portions of the covering layer to expose desired areas on the substrate;

depositing a layer of polysilicon over the entire preceding structure;

anisotropically etching the polysilicon layer to remove the polysilicon in the plane parallel to the semiconductor substrate; and



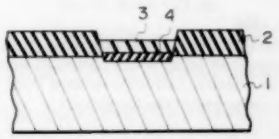
oxidizing the remaining polysilicon and the exposed areas of the semiconductor substrate forming a field oxide layer whereby a bird's beak free structure is produced.

4,435,447

METHOD FOR FORMING AN INSULATING FILM ON A SEMICONDUCTOR SUBSTRATE SURFACE

Takashi Ito, Kawasaki, and Takao Nozaki, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 105,094, Dec. 19, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,718
Claims priority, application Japan, Dec. 26, 1978, 53-163155
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—94 **9 Claims**



1. A method for forming an insulating film having stable electrical properties and high density and which is suitable for a gate insulating film, by direct thermal nitridation of a surface portion of a silicon semiconductor substrate, comprising

selecting said substrate to have a concentration of oxygen of not more than $10^{18}/cm^3$ at least in a surface layer of said substrate of at least 10 microns depth at the top of which said direct nitridation is to occur, and

subjecting said substrate to a nitridizing gas atmosphere comprising nitrogen or a nitrogen compound, so as to convert the top portion of said substrate to said insulating film by direct thermal nitridation.

4,435,448

METHOD FOR MANUFACTURING BABBITTED BEARINGS

James R. Nolt, Jr., York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 21, 1983, Ser. No. 487,253
Int. Cl.³ B05D *1/36, 3/12;* C23C *1/04*
U.S. Cl. 427—234 **10 Claims**

1. A method for lining an inner surface of a bearing shell with a babbitt metal comprising:

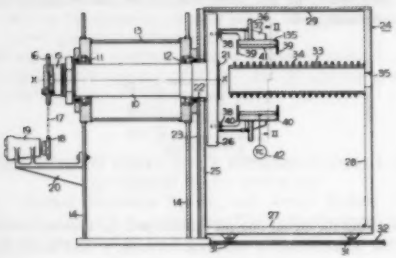
covering said surface with a flux;

placing a solid babbitt metal on said covered surface;

rotating said shell about an axis coaxial with a cylindrical axis of said inner surface;

heating said babbitt metal and said flux to a temperature sufficient to melt said metal and flux and rotating said shell

at a rotational velocity sufficient to urge any impurities at said surface to migrate toward said axis of rotation;



cooling said shell until said babbitt metal solidifies with said migrated impurities at a radially inner surface of said babbitt metal.

4,435,449

TREATMENT OF MINIMAL BRAIN DYSFUNCTION (MBD)

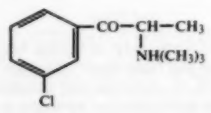
Warren C. Stern, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 263,717, May 14, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,147

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **10 Claims**

1. A method of treating minimal brain dysfunction in a human suffering from same, which comprises administering to said human an effective non-toxic minimal brain dysfunction amount of a compound of the formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof.

4,435,450

METHOD FOR APPLYING ABRASION RESISTANT THIN POLYURETHANE COATINGS

Charles R. Coleman, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 2, 1982, Ser. No. 394,556

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **10 Claims**

1. A method for applying an abrasion resistant polyurethane coating onto a surface of a substrate while minimizing volatilization of free isocyanate comprising the steps of:

a. reacting an aliphatic diisocyanate with excess hydroxy-terminated diol to form a linear hydroxy-terminated prepolymer;

b. adding to said prepolymer a triisocyanate crosslinking agent having a molecular weight greater than 500;

c. applying said prepolymer and triisocyanate mixture in a solvent to the surface of the substrate by contacting said surface with said solution in a continuous liquid phase;

d. evaporating said solvent; and

e. reacting said prepolymer and triisocyanate to form a crosslinked polyurethane coating.

4,435,451

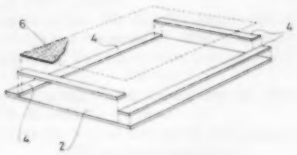
FLOOR MATS OF THE WASHABLE, DIRT ADSORBING TYPE

Robert Neubert, Hornslet, Denmark, assignor to Clean-Tex A/S, Morke, Denmark

Filed Aug. 17, 1981, Ser. No. 293,088

Int. Cl.³ A47G *27/04*

U.S. Cl. 428—15 **2 Claims**



1. A method of producing a washable, dust absorbing mat having a rubber backing, a nap of a soft yarn material on a top side of said rubber backing and a nap-free frame area along the edges of the mat, comprising the steps of preparing a pre-assembly consisting of a backing member of a "black" non-colorable rubber, a frame portion of a colored rubber or rubber-like material placed in contact with at least a top side edge area of the backing member, and an uppermost nap sheet extending outwardly to beyond the inner edge of the frame portion on a top side thereof, and subjecting this pre-assembly to heat and pressure in a vulcanization press so as to form said pre-assembly into a single unitary mat structure.

4,435,452

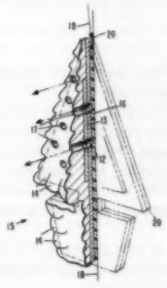
LIL GOLDEN PINE NOVELTY DISPLAY DEVICE

Ruben R. Hernandez, and Freda M. Hernandez, both of 156 McKinney Ave., Pacifica, Calif. 94044

Filed Jan. 31, 1983, Ser. No. 433,289

Int. Cl.³ A47G *33/06;* **B44C** *5/04*

U.S. Cl. 428—17 **1 Claim**



1. A novelty display device, comprising, in combination, a plurality of flat, variously-shaped panels glued one flat side upon another, forming a three dimensional contoured base, and a plurality of pine cone scales glued to the front side of said base; a gold paint coating being applied on the front of said pine cone scales; a flat sheet of Lucite being adhered to the rear side of said base, said Lucite sheet being contoured smaller than said base, and a plurality of holes drilled from the front side of said device, through said base and into the front side of said Lucite forming a roughened surface in said Lucite drilled-out portions of said holes, whereby exterior light rays upon an edge of said Lucite sheet illuminate said drilled-out, roughened Lucite surface.

4,435,453

SATURATED PREFORM AND METHOD FOR PREPARATION THEREOF

Wolf R. Vieth, 19 Partridge Run, Belle Meade, N.J. 08502, and Leonard B. Ryder, 5 Sharon Dr., Whippany, N.J. 07981

Filed Jul. 19, 1982, Ser. No. 399,824
Int. Cl.³ B65D 87/00, 89/00; B32B 9/04
U.S. Cl. 428—35 9 Claims

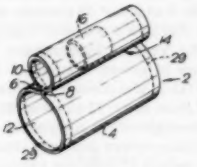
1. Biaxially oriented hollow thermoplastic article having walls which are saturated with a dissolved presaturant gas selected from the group consisting of carbon dioxide, dichlorodifluoromethane, and oxygen.

4,435,454

RECOVERABLE ARTICLE

Regis Flot, Eragny, and Michel Zoppi, Creteil, both of France, assignors to Raychem Pontoise S. A., France

Filed Apr. 1, 1982, Ser. No. 364,267
Claims priority, application United Kingdom, Apr. 8, 1981, 8111059
Int. Cl.³ B32B 7/14
U.S. Cl. 428—36 18 Claims



1. A recoverable article in which spaced-apart portions thereof are temporarily secured together to form at least one compartment in the article, the article being recoverable by heat and being arranged such that forces produced therein on recovery about a substrate overcome forces securing said portions together.

4,435,455

COMPLIANT COMPOSITE TUBULAR LINERS OF FIBER REINFORCED GLASS/GLASS-CERAMIC HAVING UTILITY AS GUN BARREL LINERS

Karl M. Prewo, Vernon, and John J. Brennan, Portland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 10, 1983, Ser. No. 456,884
Int. Cl.³ B32B 1/08, 17/12; F41C 21/02; F41F 17/08
U.S. Cl. 428—36 5 Claims

1. A compliant tubular liner particularly adapted to withstand brisant forces comprising a fiber reinforced glass or glass-ceramic matrix having an elastic modulus less than 15×10^6 psi and high fracture toughness exemplified by a critical stress intensity factor greater than 5×10^3 psi $(inch)^{\frac{1}{2}}$.

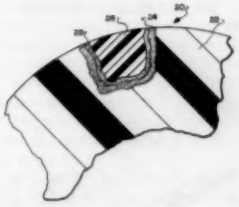
2. A composite gun barrel comprising a fiber reinforced glass or glass/ceramic matrix liner surrounded by a metal outer sleeve, the liner having an elastic modulus less than 15×10^6 psi, a fracture toughness exemplified by a critical stress intensity factor greater than 5×10^3 psi $(inch)^{\frac{1}{2}}$, and being capable of withstanding brisant forces.

4,435,456

APPLICATION OF AMBIENT TEMPERATURE CURED POLYMERS OR PREPOLYMERS TO A CURED ELASTOMER

Walter R. Hausch, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 316,023, Oct. 28, 1981, Pat. No. 4,399,852, which is a division of Ser. No. 164,127, Jun. 30, 1980, Pat. No. 4,327,138, which is a continuation-in-part of Ser. No. 73,760, Sep. 10, 1979, abandoned. This application Mar. 21, 1983, Ser. No. 477,451
Int. Cl.³ F16L 11/12; B32B 25/04
U.S. Cl. 428—36 9 Claims



1. A rubber substrate having an amine curable polymer or prepolymer adhered thereto, comprising:

(a) a cured rubber substrate containing unsaturated groups therein;

(b) a treating agent bonded to said substrate, said treating agent selected from the group consisting of N-halohydantoins, N-haloamides, N-haloimides, and combinations thereof;

(c) a polyisocyanate layer, said polyisocyanate layer residing on said treating agent, said polyisocyanate being a compound having the formula $R(N=C=X)_n$ where R is an alkyl having from 2 to 20 carbon atoms, a cycloalkyl having from 4 to 20 carbon atoms, an aromatic or an alkyl substituted aromatic having from 6 to 20 carbon atoms, where n is 2 or 3, and where X is oxygen or sulfur;

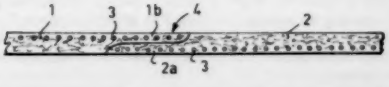
the amine curable polymer or prepolymer bonded to said polyisocyanate layer at ambient temperature.

4,435,457

THERMOPLASTIC NON-WOVEN FABRIC SEAMED BY MELT-SEAMING AND A METHOD OF MAKING SUCH A FABRIC

Matti Servo, and Matti Vainio, both of Tampere, Finland, assignors to Tamfelt Oy AB, Tampere, Finland

PCT No. PCT/FI82/00001, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02412, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 6, 1982, Ser. No. 417,135
Claims priority, application Finland, Jan. 15, 1981, 810104
Int. Cl.³ C09J 5/10; D06H 5/00
U.S. Cl. 428—58 6 Claims



1. A non-woven fabric made of a thermoplastic material and

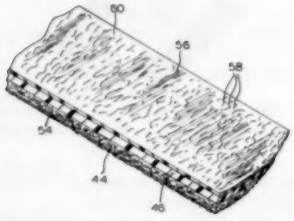
seamed by means of melt-seaming, the said fabric consisting of at least two strips of fabric (**1**, **2**; **11**, **12**; **21**, **22**) positioned side by side in the same plane and joined to each other at their opposite overlapping edges by means of a melt seam (**4**; **14**; **24**), characterized in that the strips of fabric (**1**, **2**; **11**, **12**; **21**, **22**) to be joined together are, at least at the edges (**1***b*, **2***b*; **11***b*, **12***b*; **21***b*, **22***b*) to be joined together, provided with reinforcement yarns (**3**; **23**) parallel to said edges and having a melting point higher than the melting point of the rest of the material of the fabric strips and that said edges to be joined together have by means of melting been shrunk into such a thickness that the thickness of the seam formed by said edges is substantially equal to the thickness of the strips of fabric.

4,435,458

LAMINATE FOR WEARING APPAREL AND METHODS FOR THE MANUFACTURE OF THE LAMINATE

Charles E. Hill, Coshocton, Ohio, assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 22, 1982, Ser. No. 452,222
Int. Cl.[3] **B32B** *3/26, 33/00*
U.S. Cl. 428—91 **32 Claims**



18. A laminate for use in wearing apparel, characterized by

(a) a fibrous web;

(b) a synthetic foamed resin web joined to said non-woven fibrous web to form a prelaminate;

(c) the exposed surface of said non-woven fibrous web on said pre-laminate being napped to form the internal surface of wearing apparel formed therefrom.

(d) a resin film web adhered to the exposed foam surface of said pre-laminate; and

(e) the exposed surface of said film web being creped.

4,435,459

CARPET BACKED WITH FIRE SUPPRESSANT POLYURETHANE COMPOSITION

Linda D. McKinney, and Randall C. Jenkines, both of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 372,584, Apr. 28, 1982, Pat. No. 4,397,978. This application Mar. 18, 1983, Ser. No. 476,679
Int. Cl.[3] **B32B** *3/02, 33/00*
U.S. Cl. 428—95 **12 Claims**

1. A carpet comprising (I) a primary backing; (II) a yarn tufted or woven through said primary backing thereby creating a yarn bundle on the underside of the resultant tufted or woven greige good and (III) a polyurethane composition applied to the underside thereby encapsulating the yarn bundles and adhering the yarn bundles to the primary backing; said polyurethane composition comprising a catalyzed reaction product of a mixture comprising

(A) a relatively high molecular weight polyether polyol having an average of from 2 to about 8 hydroxyl groups per molecule and an average hydroxyl equivalent weight of from about 500 to about 2200 or a mixture of such polyols;

(B) a relatively low molecular weight polyol having an average of from about 2 to about 8 hydroxyl groups per molecule and an average equivalent weight of from about 31 to about 230 or a mixture of such polyols;

(C) an organic polyisocyanate or polyisothiocyanate having an average of from about 2 to about 4 NCX (each X being independently O or S) groups per molecule or a mixture of such isocyanates or isothiocyanates; and

(D) a filler component comprising

(1) an inorganic filler component comprising

(a) hydrated alumina,

(b) lead-containing compound,

(c) antimony compound, and

wherein component (a) is present in quantities of from about 10 to about 55 percent by weight of the combined weight of the components of (D-1); component (b) is present in quantities of from about 0.01 to about 2 percent by weight of the combined weight of the components of (D-1); component (c) is present in quantities of from about 46 to about 90 percent by weight of the combined weight of the components (D-1); and such compounds have an average particle size of from about 0.02 to about 22 microns, and an average surface area of from about 0.7 to about 75 m^2/gram;

(2) a halogen-containing resin containing at least about 85% halogen by weight and an average particle size of from about 9 to about 60 microns; and

with the proviso that (a) if it is desired that the urethane backed carpet passes the Vertical Flammability Test employing a flame temperature of greater than about 1550° F. (843° C.), then component (D-1) also contains a hydrated zinc compound in an amount of from about 12 to about 40 percent by weight of the combined weight of the components of (D-1), and (b) if the carpet substrate is woven and has a stitch rate of at least 50 tufts per square inch (7.55 tufts per square centimeter) then a sufficient quantity of

(E) an organometallic viscosity reducing agent is employed to provide a mixture of components (A), (B), (D) and (E) with a viscosity of less than about 14,000 centipoise (14 Pa·s) at 33° C. and wherein

(1) components (A) and (B) are present in quantities such that the ratio of the number of hydroxyl equivalents contributed by component (B) to the number of hydroxyl equivalents contributed by component (A) is from about 0.8:1 to about 5.5:1;

(2) components (A), (B) and (C) are present in quantities so as to provide an NCX to OH ratio of from about 0.95:1 to about 1.5:1;

(3) component (D-1) is present in quantities of from about 20 to about 60 percent by weight based upon the combined weight of components A. B and D; and

(4) component (D-2) is present in quantities of from about 10 to about 35 percent by weight based on the combined weight of components A, B and D.

4,435,460

PLASTIC TUBULAR OBJECTS

Julian M. Menzel, Sempahore Park, Australia, assignor to Rib Loc (Hong Kong) Ltd., Hong Kong, Hong Kong

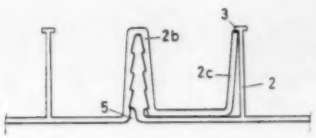
Division of Ser. No. 950,085, Oct. 10, 1978, Pat. No. 4,209,043. This application Jun. 18, 1980, Ser. No. 160,586
Claims priority, application Australia, Oct. 18, 1977, PD2100; Feb. 15, 1978, PD3384
The portion of the term of this patent subsequent to Jun. 24, 1999, has been disclaimed.
Int. Cl.[3] **B23B** *3/04;* **F16L** *9/16*
U.S. Cl. 428—129 **8 Claims**

1. An elongated strip which can be formed into a tubular article by helically winding said strip to overlap at least its two longitudinal edges, said strip including:

a series of longitudinally extending spaced apart reinforcements, said strip further including connecting means comprising a longitudinally extending joining rib near one of said longitudinal edges and a longitudinally extending engaging rib spaced from said joining rib and adapted to

engage said joining rib when the strip is wound to form the tubular article, said reinforcements being between said engaging rib and said joining rib; and

extension means attached to and extending laterally outwardly from said engaging rib for engaging and interlock-



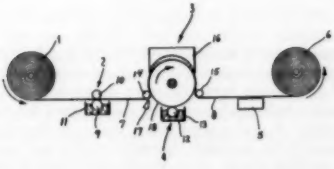
ing with at least said longitudinally extending reinforcement which is adjacent said joining rib when said strip is helically wound to form said tubular article, said extension means having a length at least equal to the spacing between said joining rib and said last mentioned reinforcement.

4,435,461

METHOD OF PROVIDING A SURFACE EFFECT IN A RELEASE PAPER PRODUCT

Lorin S. Gray, III, Portland, and Jeffrey S. Doody, Yarmouth, both of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 19, 1982, Ser. No. 435,209
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—141 **10 Claims**



1. In a method of providing a desired surface effect in a release coating on a substrate, comprising the steps of:

A. applying a coating of an electron beam radiation curable composition or material to a side of a substrate;

B. pressing the coated side of the substrate against a replicative surface having a desired surface effect to cause the surface of the coating to conform to the replicative surface;

C. irradiating the coating with electron beam radiation directed first through the substrate to partially cure the coating sufficiently to enable it to be removed from the replicative surface securely attached to the substrate and with the replicated surface effect in the coating being maintained; and

D. stripping the substrate from the replicative surface with the partially cured coating adhered to the substrate;

The improvement including the further step of

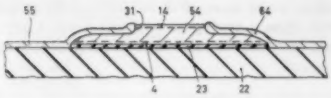
E. irradiating the partially cured coating out of contact with the replicative surface a second time with electron beam radiation without first applying additional coating composition or material over the first coating.

4,435,462

INFRA-RED DETECTOR ELEMENTS

Richard B. Withers, Romsey, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 179,339, Aug. 18, 1980, abandoned, which is a division of Ser. No. 59,831, Jul. 23, 1979, Pat. No. 4,301,591. This application Nov. 9, 1981, Ser. No. 319,776
Claims priority, application United Kingdom, Jul. 31, 1978, 31750/78
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—156 **7 Claims**



1. An infra-red detector device having at least one detector element and comprising:

a substrate having a major surface;

a body of cadmium mercury telluride which is sensitive to infra-red radiation mounted on the major surface of the substrate, at least a portion of the body being in the form of a mesa on a major surface of the body which is remote from the substrate which mesa includes an active area of the detector element and has a top surface and at least two side walls; and

a plurality of separate, metal layer electrodes which are disposed on the body in contact with the mercury cadmium telluride to define, between the electrodes, a current carrying path through the active area of the mesa and which extend onto a part of the major surface of the substrate beyond the body to provide connections to the detector element;

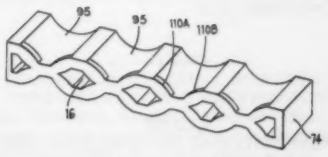
wherein each of the electrodes contacts the body at a side wall of the mesa without contacting the top surface of the mesa and the contacted side walls of the mesa are sufficiently steep so that said current carrying path passes through the bulk of the mesa between its side walls.

4,435,463

SUPPORTING AND SPACING MEMBER FOR WEB MATERIAL ROLLS

Thomas A. Roellchen, Almena Township, Van Buren County, Mich., assignor to Ace Polymers, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 235,827, Feb. 19, 1981, Pat. No. 4,385,091. This application Jun. 7, 1982, Ser. No. 385,360
Int. Cl.³ B32B *3/26*; B65D *85/67, 85/62*
U.S. Cl. 428—158 **4 Claims**



1. In a structure for protectively supporting and spacing rolls of web material in a multi-layer stack, comprising an elongated member of expanded polystyrene material having a pair of opposed surfaces, a first of said surfaces having a plurality of spaced, parallel, generally semi-cylindrical indentations disposed to receive rolls of web material, said indentations being separated by separating walls, the endmost indentations being oriented between a separating wall and an end wall, the radius of each of said semi-cylindrical indentations being

greater than the depth of said indentation, whereby the rolls will be snugly retained within the indentations in a pair of members and the members will be out of contact with each other, the improvement comprising wherein at least one upright and spaced wall segment is provided in each said indentation along one lateral edge of said elongated member and between said separating walls and associated end walls, each said wall segment having an arcuate edge with a radius opposite the radius of said semi-cylindrical indentation and conforming to the radius of a respective indentation in an adjacent member thereby enabling, upon a lengthwise shifting of one member relative to said adjacent member, said wall segment in one indentation to be received in the indentation of said adjacent member upon a nesting thereof and without any lateral offset of said one member relative to said adjacent member.

4,435,464

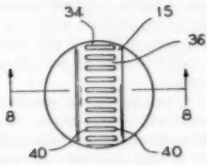
HINGE FOR THERMOPLASTIC MATERIAL

Loren J. Hulber, Naperville, and Raymond W. Fluckiger, Chicago, both of Ill., assignors to Jostens, Inc., Minneapolis, Minn.

Division of Ser. No. 253,245, Apr. 13, 1981, Pat. No. 4,397,904. This application May 2, 1983, Ser. No. 490,383

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—167 **2 Claims**



1. A hinge for devices composed of thermoplastic sheet material comprising: a plurality of grooves in said sheet material extending along the desired dimension of said sheet and defining a longitudinal orientation for the hinge, each of said grooves oriented transversely to the longitudinal orientation of the hinge and spaced apart from each other by planar regions of said sheet material which are integral with the sheet material on either side of said hinge, each of said grooves being more narrow in the longitudinal direction than each of said regions separating them, such that the hinge lacks a substantially continuous longitudinally oriented line of indentation where tearing would most likely occur.

4,435,465

COMPOSITE MATERIAL FOR SHIELDING AGAINST ELECTROMAGNETIC RADIATION

Harold Ebneth, Leverkusen; Hans G. Fitzky, Odenthal, and Wolfgang Oberkirch, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,803

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024888

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 **20 Claims**

1. A composite material comprising: metallized sheet-form textiles contained in a polymer matrix with additives for increasing at least one of the ohmic, electrical and magnetic

losses uniformly present in the polymer or on the sheet-form textiles.

4,435,466

MULTI-LAYERED SEALING SHEET OF ELASTOMERIC SYNTHETIC RESIN

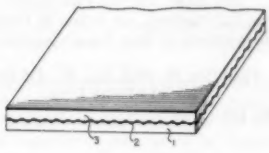
Werner Kuhnel, Neunkirchen-Schoneshof; Peter Pütz, St. Augustin-Menden; Manfred Simm, Troisdorf, and Paul Spielau, Troisdorf-Eschmar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,400

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150021

Int. Cl.³ B32B *5/08, 17/04*

U.S. Cl. 428—215 **11 Claims**



1. A multi-layered sealing sheet for the building industry which comprises a textile reinforcing insert embedded between layers of elastomeric synthetic resin containing additives to enhance the weatherability and fillers to enhance the mechanical properties of said sealing sheet, the outer layers of said sealing sheet being weldable thermally and/or by use of solvents or swelling agents, all layers which contain elastomeric synthetic resin being free of vulcanization accelerator and containing synthetic resin consisting essentially of an ethylene-propylene-diene terpolymer and/or ethylene-propylene copolymer, and the reinforcing insert embedded in between the layers with the use of heat being a fabric, mat, knitted fabric, or similar textile material formed of synthetic resin fibers and/or glass fibers with a weight per unit area of 20–70 g/m² and with interstices having a spacing of at least 2.0 mm through which the elastomeric synthetic resin penetrates; said multi-layered sealing sheet, due to the penetration of the elastomeric synthetic resin through the interspaces of the reinforcing insert, exhibiting a parting force of the layers which is larger than 100 N/5 cm.

4,435,467

ATHLETIC SUPPORT FABRIC

Jack S. Rogers, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

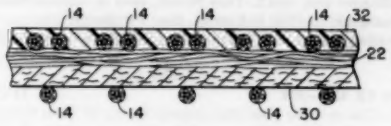
Filed May 9, 1983, Ser. No. 492,820

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—254 **8 Claims**

1. An athletic support fabric having a substrate comprising:

a warp knit fabric having a face and a rear side, a plurality of rows of weft continuous filament weft yarn laid in on the face side of said knit fabric, a layer of non-woven fabric on the rear side of side of said knit fabric, a plurality of wales of a chain



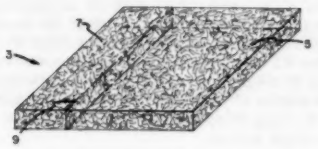
stitch spaced along the course direction of said fabric being knit through said non-woven fabric and holding said non-woven fabric and said weft yarn in position and a layer of rubber base adhesive coated to the face side of said fabric.

4,435,468

SEAMLESS CERAMIC FIBER COMPOSITE ARTICLES AND METHOD AND APPARATUS FOR THEIR PRODUCTION

John D. TenEyck, Lewiston, N.Y., assignor to Kennecott Corp., Cleveland, Ohio

Filed Feb. 12, 1982, Ser. No. 348,482
Int. Cl.³ B32B *5/22;* **E04B** *1/00*
U.S. Cl. 428—285 **9 Claims**



1. A planar seamless composite fiber insulating mat comprising at least one planar lower temperature resistant portion having planar faces and edge faces, the lower temperature resistant portion comprising lower temperature resistant insulating fibers and at least one planar high temperature resistant portion having planar faces and edge faces, the higher temperature resistant portion comprising higher temperature resistant fibers, wherein an edge face of said lower temperature resistant portion is joined to an edge face of said higher temperature resistant portion by a transition zone of commingled fibers of said lower temperature resistant fiber and said higher temperature resistant fibers.

4,435,469

HOT MELT ADHESIVE FOR BONDING PAPER TO GLASS FIBER

Ralph M. Fay, Lakewood, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Apr. 28, 1982, Ser. No. 372,605
Int. Cl.³ C08K *5/01, 3/26, 7/10;* **C09J** *3/14*
U.S. Cl. 428—285 **18 Claims**

1. A hot melt adhesive composition consiting essentially of by weight:

Microcrystalline Wax	8–12%
Synthetic Polyethylene Wax	8–12%
Hydrocarbon Resin	13–17%
Ethylene-Vinyl Acetate Copolymer	6–12%
Filler and	Balance

-continued

Antioxidant.	

16. A fiber glass mat adhered to a Kraft paper facing wherein the paper and the fiber glass are intimately contacted at temperatures exceeding 140 degrees F. and the composition adhering the fiber glass mat to the Kraft paper facing consists essentially of by weight:

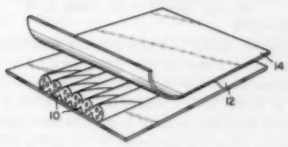
Microcrystalline Wax	8–12%
Synthetic Polyethylene Wax	8–12%
Hydrocarbon Resin	13–17%
Ethylene-Vinyl Acetate Copolymer	6–12%
Filler and Antioxidant.	Balance

4,435,470

REPAIR MATERIAL FOR TUBELESS TIRES

Alec W. Niconchuk, Peabody, Mass., assignor to North Shore Laboratories Corporation, Peabody, Mass.

Filed Apr. 12, 1982, Ser. No. 367,462
Int. Cl.³ B32B *31/00*
U.S. Cl. 428—294 **8 Claims**



1. Cord repair material for repairing tubeless tires from the outside comprising:

(a) a multiplicity of individually twisted, parallel fibrous cords,

(b) an elastomeric adhesive adhering to, fully coating, and at least partially impregnating each said cord in quantity over 175% by weight of fiber,

(c) said adhesive comprising a highly plasticized, vulcanized, essentially weak elastomer, and

(d) said cords lying substantially contiguous with the elastomer which coats adjacent cords vulcanized together, at least in places, whereby adjacent cords are joined by permanently set elastomer but can be peeled apart by rupturing the weak elastomeric connection therebetween.

4,435,471

TRANSFER-ONTO-PLAIN PAPER TYPE OF PRESSURE-SENSITIVE COPYING PAPER

Toshihiko Matsushita, Funabashi; Shigetoshi Hiraishi, Tokyo, and Sadao Morishita, Ibaraki, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,145
Claims priority, application Japan, Jun. 17, 1981, 56-93219
Int. Cl.³ B41M *5/16*
U.S. Cl. 428—320.8 **5 Claims**

1. A transfer-onto-plain paper type of pressure-sensitive copying paper prepared by coating the back of a substrate with a single layer containing a chelate color forming reaction system comprising a chelate forming metal compound and ligand and further containing a wax, both of said metal compound and ligand being microencapsulated.

4,435,472

ADHERENT, ACID CURED RESIN PROTECTIVE COATINGS FOR CONCRETE AND STEEL

George R. Leah, New Kensington, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 27, 1982, Ser. No. 412,329
Int. Cl.³ B32B 9/06; B05D 1/36
U.S. Cl. 428—333 11 Claims

6. A corrosion resistant coated structure comprising a substrate having an acid soluble surface, a primer layer coated on the surface of the substrate, which layer comprises an acid stable, thermoplastic elastomer selected from the group consisting of styrene-polybutadiene block copolymers, styrene-polyisoprene block polymers, chlorosulfonated polyethylene, styrene-butadiene copolymers, and neoprene, and a corrosion resistant layer coated on the primer layer, which layer comprises an acid cured, corrosion resistant furan or phenolic polymer.

9. The article of claim 6 wherein the primer layer has a thickness of at least about 0.2 mil and the corrosion resistant layer has a thickness of at least about ¼ inch.

4,435,473

AQUEOUS PEROXIDE EMULSION FOR USE WITH GLASS FIBERS

Albert E. Tamosauskas, Pittsburgh, and Chester S. Temple, McKees Rocks, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 136,645, Apr. 2, 1980, Pat. No. 4,391,876. This application Jul. 28, 1982, Ser. No. 402,501
Int. Cl.³ B32B 9/00; C08K 3/40
U.S. Cl. 428—378 20 Claims

1. An aqueous sizing composition for treating glass fibers, wherein the sizing composition, comprises:

(1) an aqueous emulsion of an organic peroxide that is a liquid at about 20° C. and that is insoluble or has limited solubility in water present in an effective amount to give an amount of active peroxide in the sizing composition in the range of greater than 0.6 to about 10 weight percent and, wherein the emulsion has improved stability and dilutability and has an average particle size of around 1.5 microns or less, comprising:

(a) at least 1 to about 60 percent by weight based on the weight of the emulsion of said liquid organic peroxide selected from the group consisting of hydroperoxides, α-oxy and α-peroxy hydroperoxides, dialkyl peroxides, aldehyde and ketone peroxides, diacyl peroxides, peroxyesters, peroxy acids, peroxydicarbonates, peroxymonocarbonates and perketals,

(b) about 1 to about 15 weight percent of the emulsion of a nonionic emulsifier blend having three emulsifiers selected from the group consisting of polyalkylene glycol ethers, dialkylarylpolyether alcohols, and polyoxypropylene-polyoxyethylene condensates, phenoxy polyethoxyethanols, polyethylene derivatives of fatty acids, partial esters of sorbitol anhydrides; ethoxylated alcohols, fatty acids, fatty esters and oils, alkylphenols; glycerol esters, sucrose esters and derivatives, monoglycerides and derivatives, and sorbitan derivatives polyethoxy phenols, alkyl polyether alcohols, ethylene oxide alkylated phenol condensation products, and mixtures thereof, wherein one emulsifier has an HLB in the range of about 6 to about 12 and one emulsifier has an HLB in the range of about 9 to 15 and one emulsifier has an HLB in the range of about 12 to about 20 each in proportions to give an overall HLB level for the emulsifier system in the range of about 9 to about 20, and

(c) the remaining weight percent of the emulsion is water,

(2) about 0.2 to about 10 weight percent of a vinyl-containing organic silane,

(3) about 0.001 to about 1 weight percent of a lubricant,

(4) an amount of water to give a total solids content in the range of about 1 to about 25 weight percent of the sizing composition.

4,435,474

AQUEOUS SIZING COMPOSITION AND SIZED GLASS FIBERS AND METHOD

Balbhadra Das, and L. Dow Moore, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 273,791, Jun. 15, 1981, Pat. No. 4,338,233. This application Mar. 29, 1982, Ser. No. 363,197
Int. Cl.³ D02G 3/00
U.S. Cl. 428—391 21 Claims

1. One or more glass fiber strands where the glass fibers have the dried residue of an aqueous sizing composition for use in reinforcing polymeric materials, wherein the aqueous sizing composition comprises:

(a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix to be reinforced with glass fibers,

(b) one or more organo-silane coupling agents in an amount up to about 20 weight percent of the solids of the sizing composition,

(c) an interaction product of an epoxidized polar thermoplastic copolymer and an unhydrolyzed or partially hydrolyzed amino-containing organo-silane coupling agent in an amount of about 10 weight percent up to about 50 weight percent of the solids of the sizing composition, wherein the interaction product is formed by contacting the epoxidized copolymer which has about 2 to about 12 parts of epoxidized monomer per 100 parts of copolymer and which has a glass transition temperature from about −10° C. to about 70° C. with the amino-containing organo-silane coupling agent wherein the amount of the amino silane coupling agent is in the range of about 0.1 to about 1.2 weight percent of an aqueous mixture having at least 20 weight percent of the epoxidized copolymer, and

(d) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,435,475

DIELECTRIC FILM

Tohru Sasaki; Syuuzi Terasaki; Hideo Munakata, and Mitsuru Ohta, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,900
Claims priority, application Japan, Apr. 24, 1980, 55-54998
Int. Cl.³ B32B 27/30, 27/36; N01G 4/08
U.S. Cl. 428—409 7 Claims

1. A dielectric film having minutely rough surfaces and prepared by (a) molding a resin composition comprising (i) 99.5 to 70 parts by weight of a polyvinylidene fluoride and (ii) 0.5 to 30 parts by weight of a resin selected from the group consisting of a polycarbonate, a thermoplastic polyester, and mixtures thereof into a continuous sheet and (b) stretching the continuous sheet of (a) in at least one direction to give a dielectric film with minutely rough surfaces.

4,435,476

METHOD OF MAKING AN ABRASION RESISTANT COATING ON A SOLID SUBSTRATE AND ARTICLES PRODUCED THEREBY

Richard A. Phillips, Acton, and Theodore A. Haddad, Leominster, both of Mass., assignors to Foster Grant Corporation, Leominster, Mass.

Filed Aug. 18, 1982, Ser. No. 409,272
Int. Cl.³ B32B 27/12, 27/30, 15/08; B05D 3/06
U.S. Cl. 428—412 23 Claims

1. A method of improving the abrasion resistance of cross-linked organosiloxane coating, said coating having been prepared by applying to a solid substrate an organosiloxane coat-

ing liquid comprising organosilanol molecules of the formula $R'_mSi(OH)_{4-m}$ or a precursor of said organosilanol or a partial hydrolysis product thereof, where m is 1 or 2 and R' is each independently a hydrocarbon radical and by curing the resultant coating to obtain an abrasion resistant, cross-linked organosiloxane coating, which method comprises a glow discharge treatment of said cross-linked organosiloxane coating under a pressure range of from about 5 to about 150 microns.

17. The solid substrate as defined in claim **16**, wherein the solid substrate is a plastic material.

4,435,477

RUBBER COMPOSITIONS AND ARTICLES THEREOF HAVING IMPROVED METAL ADHESION AND METAL ADHESION RETENTION

James A. Davis, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 25, 1983, Ser. No. 517,093

Int. Cl.³ B32B *15/06;* **C08L** *93/04;* **B60C** *9/16*

U.S. Cl. 428—462 **27 Claims**

19. A metal-reinforced rubber ply to be used as an element in a manufactured rubber article, said ply having a rubber composition and a brass-plated element bonded thereto wherein said rubber composition is made by curing a composition comprising:

a vulcanizable rubber;

from about 0.5 to about 12.5 parts by weight of an organic salt of nickel per 100 parts of the rubber component in said rubber composition; and

at least about 3.0 parts by weight of a thermoplastic resin derived from crude wood rosin and containing carboxylic acid groups or carboxylic acid ester groups per 100 parts of the rubber component in said rubber composition.

4,435,478

VINYLIDENE CHLORIDE CO-POLYMER COMPOSITIONS

Anthony J. Burgess, and David L. Gardner, both of Runcorn, England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 860,312, Dec. 12, 1977, Pat. No. 4,341,679. This application Jul. 26, 1982, Ser. No. 401,695

Claims priority, application United Kingdom, Dec. 20, 1976, 53021/76

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—463 **12 Claims**

1. A method of applying a protective coating to a metal substrate wherein there is employed an aqueous latex which comprises applying to a metal substrate an aqueous latex of a copolymer capable of forming stable films which have excellent protective properties on metallic substrates, said films having good chemical resistance and low permeability to water vapour, said copolymer consisting essentially of (i) vinylidene chloride, (ii) vinyl chloride, (iii) one or more alkyl acrylates having from 1 to 12 carbon atoms in the alkyl group and/or one or more alkyl methacrylates having from 2 to 12 carbon atoms in the alkyl group and (iv) one or more aliphatic alpha-beta-unsaturated carboxylic acids, the proportion of vinylidene chloride being from 65 to 90 parts by weight, the proportion of the said alkyl acrylates and/or methacrylates being from 2 to 15 parts by weight and the proportion of the said carboxylic acids being from 0.2 to 8 parts by weight, per hundred parts by weight of the total vinylidene chloride and vinyl chloride.

4,435,479

PACKAGING FOR FRAGILE, HEAVY AND/OR DEFORMABLE PRODUCTS

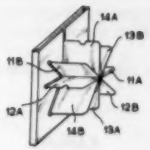
Jean Pivoteau, Le Viviers Du Lac, and Jean-Pierre Durot, Montmelian, both of France, assignors to Vetrotex Saint-Gobain, France

Filed Dec. 2, 1982, Ser. No. 446,259

Claims priority, application France, Dec. 4, 1981, 81 22721

Int. Cl.³ B65D *57/00;* **G09F** *1/06*

U.S. Cl. 428—542.8 **10 Claims**



1. An article of manufacture formed from a single blank of sheet material for support of a product such as a length of a yarn reeled in a manner to provide an open cavity, said blank including a central zone providing a substantially continuous surface of rectangular outline, a flap extending from each side of said central zone, each flap being foldable in a first direction about a fold line comprising a line of demarcation between said central zone and a respective flap to form a flange having a make up of three coextensive, superposed sheet material layers, a tab extending from each flap, each tab being foldable in a second, opposite direction about individual second fold lines each comprising a line of demarcation between a flap and a tab, and a slot formed at least within a portion of each tab extending coaxially toward a slot in an opposite tab permitting locking interengagement of said tab to form a spindle extending outwardly of said central zone for receipt in said cavity.

4,435,480

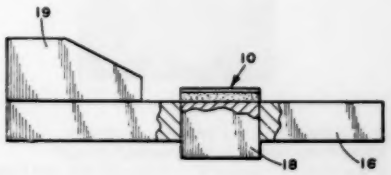
PRESSED AND SINTERED COMPOSITE BODY COMPRISING A THIN TAPE CAST LAYER AND A THICK BASE LAYER

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,654

Int. Cl.³ B22F *7/02;* **B32B** *15/16, 9/00, 9/04*

U.S. Cl. 428—548 **6 Claims**



1. A composite body comprising

a first layer of an alumina ceramic made by tape casting, and a second layer of

an alumina ceramic having a composition substantially identical to said first layer, second layer being formed from a compressed powdered alumina,

the thickness of said first layer being uniform and substantially less than the thickness of said second layer,

said first and second layers being permanently bonded together by simultaneously compressing said first layer against and compacting the powder comprising said sec-

ond layer to form a compressed composite body and sintering.

3. A composite body comprising

a first layer composed of a first substance made by tape casting, and

a second layer composed of a second substance, said second substance being a compressed powder,

the thickness of said first layer being uniform and substantially less than the thickness of said second layer,

said first and second layers being permanently bonded together by simultaneously compressing said first layer against and compacting the powder comprising said second layer to form a compressed composite body and sintering,

wherein said first and second layers are different compositions.

4,435,481

PYROPHORIC FOIL AND ARTICLE, AND PYROPHORIC TECHNIQUE

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 25,456, Mar. 30, 1979, Pat. No. 4,349,612, which is a continuation-in-part of Ser. No. 963,313, Nov. 24, 1978, abandoned. This application Jul. 28, 1980, Ser. No. 172,671

Int. Cl.³ B32B *15/02, 15/18*

U.S. Cl. 428—550 **7 Claims**

1. A pyrophoric foil that develops a temperature of at least about 500° F. upon exposure to air, and made by pyrophorically activating a foil of low carbon steel not over about 1.5 mils thick, the activating leaving an unactivated stratum about 0.3 mil thick.

4,435,482

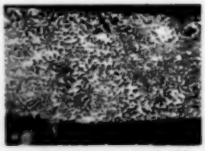
SLIDING MEMBER AND PROCESS FOR PRODUCING THE SAME

Kenichiro Futamura, Toyota; Eiji Asada, Okazaki, and Tatsuhiko Fukuoka, Aichi, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Feb. 25, 1981, Ser. No. 238,105

Int. Cl.³ B22F *7/04;* **B32B** *15/16*

U.S. Cl. 428—553 **15 Claims**



(X 100)

1. A composite sliding member comprising:

a base comprised of an iron-based alloy; and

a bearing layer, consolidated with said base and formed by applying on said base a powder coating having a thickness of not more than 0.5 mm and baking said powder coating to consolidate it with said base, said powder comprising an iron family element and from 3% to 30% by weight of boron and from 0.5% to 15% by weight of lead.

10. A composite sliding member comprising:

a base comprising an iron-based alloy; and

a bearing layer, consolidated with said base and formed by applying on said base a powder coating having a thickness of not more than 0.5 mm and baking said powder coating to consolidate it with said base, said powder comprising an iron family element, from 15% to 30% by weight of boron and from 0.5 to 8% by weight of phosphorus.

4,435,483

LOOSE SINTERING OF SPHERICAL FERRITIC-AUSTENITIC STAINLESS STEEL POWDER AND POROUS BODY

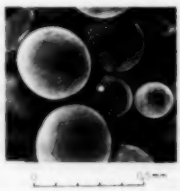
Christer Ahslund, Torshälla; Karl H. T. Andersson, Eskilstuna, and Sven S. Bergh, Täby, all of Sweden, assignors to Nyby Uddeholm Powder Aktiebolag, Torshälla, Sweden

Filed Feb. 8, 1982, Ser. No. 346,869

Claims priority, application Sweden, Feb. 6, 1981, 8100842

Int. Cl.³ B22F *3/10;* **C22C** *38/44*

U.S. Cl. 428—566 **10 Claims**



1. A porous sintered body, with good resistance to corrosion and with a pore volume which can be predetermined within given narrow limits, produced by loose sintering of a spherical powder of stainless steel at a sintering temperature between 1200° C. and 1600° C., wherein said stainless steel has a ferritic-austenitic structure at room temperature and a ferritic structure at the sintering temperature.

2. The sintered body as claimed in claim 1, wherein said sintered body is a filter material.

4,435,484

DEVICE FOR PROPAGATING MAGNETIC DOMAINS

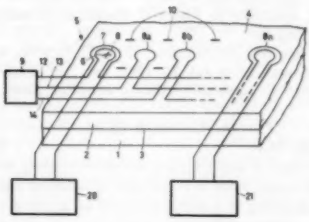
Dirk J. Breed; Bernardus A. H. Van Bakel; Antonius B. Voermans, and John M. Robertson, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,974

Claims priority, application Netherlands, Jul. 22, 1980, 8004201

Int. Cl.³ G11C *11/02;* **C04B** *35/50*

U.S. Cl. 428—693 **7 Claims**



1. A device for propagating magnetic domains comprising:

a monocrystalline, nonmagnetic substrate having a deposition face; and

a monocrystalline layer of an iron garnet, capable of supporting localized, enclosed magnetic domains, grown in compression on the deposition face of the substrate, said iron garnet layer having a positive magnetostriction constant and having a mechanical stress-induced uniaxial magnetic anisotropy component;

characterized in that:

the iron garnet has iron lattice sites and dodecahedral lattice sites, the iron garnet comprises manganese at a portion of the iron lattice sites and the iron garnet consists essentially of

ions which contribute little to damping at the dodecahedral lattice sites;

the nonmagnetic substrate is a rare earth-gallium garnet; and

the iron garnet layer has been grown on a (100) deposition face of the substrate.

4,435,485

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima, Izumi; Masashi Somezawa, Sendai; Minoru Takamizawa, Annaka; Yoshio Inoue, Annaka, and Hiroshi Yoshioka, Annaka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,306

Claims priority, application Japan, Aug. 23, 1980, 55-116166

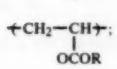
Int. Cl.³ H01F *10/02*

U.S. Cl. 428—694 **7 Claims**

1. A magnetic recording medium having a magnetic layer comprising magnetic or magnetizable powders or particles and a binder comprising a composition containing (A) a compound having components represented by recurring units having the following formulas:

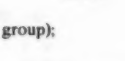
Unit (I):

Unit (II):



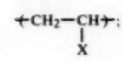
(wherein R is methyl or ethyl group);

Unit (III):



(wherein X is a group consisting an acrylic or methacrylic double bond); and,

Unit (IV):



in which the number of recurring units represented as Unit (I) ranges from approximately 200 to 800; the number of recurring units represented by Unit (II) ranges from approximately 10 to 200; the number of recurring units represented by Unit (III) ranges from approximately 3 to 100; and the number of recurring units represented by Unit (IV) is optionally in the range up approximately 200; and (B) a compound having at least two acrylic and/or methacrylic double bonds in the molecule thereof and having a molecular weight ranging from approximately 1,000 to 6,000 in which the molecular weight in the molecule thereof per one double bond is in the range from approximately 80 to 3,000; and said composition used as the binder is cured by irradiation and wherein the composition comprises the compound (A) in the amount ranging from approximately 20 to 80% and the compound (B) in the amount ranging from approximately 80 to 20%.

4,435,486

QUICK DISCONNECT BATTERY INSTALLATION AND CHARGING SYSTEM

Nicholas T. Pomaro, 514 W. Burr Oak Dr., Arlington Heights, Ill. 60004; Russell Pomaro, 5114 Central Ave., Western Springs, Ill. 60558, and Louis H. Stauffer, 2150 Cargill Dr., Northbrook, Ill. 60062

Filed Jun. 4, 1982, Ser. No. 384,797

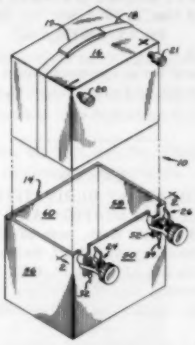
Int. Cl.³ H01M *2/00*

U.S. Cl. 429—1 **15 Claims**

1. In a vehicle having positive and negative electrical leads, means for facilitating the installation therein, removal therefrom, and charging of a storage battery having threaded positive and negative electrical terminals on a lateral portion thereof, said means comprising:

a first housing rigidly mounted to said vehicle and having an open upper portion for receiving said storage battery and including a bottom panel and a plurality of lateral walls for securely engaging said storage battery in tight-fitting relation;

first and second threaded conductive pins securely engaging and electrically coupled to respective electrical terminals



of said storage battery and extending outward from said lateral portion thereof; and

first and second engaging electrical clamp means coupled to respective positive and negative leads of said vehicle and secured to an upper edge portion of a lateral wall of said first housing for securely engaging respective first and second conductive pins when said storage battery is positioned in said first housing in electrically coupling said vehicle to said storage battery.

4,435,487

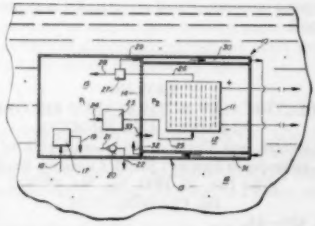
PRIMARY BATTERY SYSTEM

Lawrence S. Supelak, Rocky River; Steven J. Specht, Mentor, and Richard C. Hills, Chardon, all of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 13, 1982, Ser. No. 449,485

Int. Cl.³ H01M *6/34*

U.S. Cl. 429—70 **16 Claims**



10. A primary battery system comprising:

a primary battery cartridge producing as an incident of electrochemical operation thereof a gaseous by-product and a solute by-product in a circulated electrolyte liquid;

means for replacing a portion of the fluid with fresh electrolyte solvent;

pressurizing means for placing the fluid including the electrolyte, the replacement solvent and said by-products therein under a pressure preselected to cause the volume

ratio of the gaseous component to liquid component of the mixture to be reduced; and

recirculating the fluid to the battery cartridge for further operation thereof.

4,435,488

GELLING AGENT FOR ALKALINE CELLS

William S. Bahary, Pearl River, and Rowland A. Griffin, Ossining, both of N.Y., assignors to Duracell Inc., Bethel, Conn.

Filed Mar. 8, 1982, Ser. No. 355,784

Int. Cl.³ H01M *4/62*

U.S. Cl. 429—212 **22 Claims**

9. An anode blend for an electrochemical cell comprising an anode active powder and cross-linked carboxymethyl cellulose.

4,435,489

CATIONIC HYDRAZONE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Beat Müller, and Martin Roth, both of Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

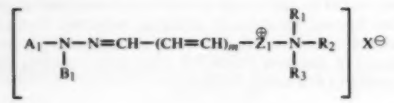
Division of Ser. No. 264,929, May 18, 1981, Pat. No. 4,383,948. This application Sep. 22, 1982, Ser. No. 421,221

Claims priority, application Switzerland, May 21, 1980, 3962/80

Int. Cl.³ G03C *1/84*; C08K *5/16*; G02B *5/20*; G02C *7/10*

U.S. Cl. 430—17 **9 Claims**

3. A photocrosslinked polymer coating which is coloured by a hydrazone derivative having the formula



(1)

in which A_1 is a substituted or unsubstituted aromatic radical, B_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 8 carbon atoms, substituted or unsubstituted cycloalkyl having 5 to 6 carbon atoms, substituted or unsubstituted aralkyl having 1 to 4 carbon atoms in the alkyl moiety or substituted or unsubstituted aryl, R_1, R_2 and R_3 independently of one another are substituted or unsubstituted alkyl having in each case 1 to 8 carbon atoms, substituted or unsubstituted cycloalkyl having 5 or 6 carbon atoms, substituted or unsubstituted aralkyl having 1 to 4 carbon atoms in the alkyl moiety or polyoxyalkylene, Z_1 is substituted or unsubstituted arylene, $X^{\ominus}$ is an anion and m is 0, 1, 2 or 3.

4,435,490

ELECTRICALLY ACTIVATABLE RECORDING ELEMENT AND PROCESS

Mark Lelental, and David J. Steklenski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,572

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—45 **27 Claims**

1. In an electrically activatable recording element comprising an electrically conductive support having thereon an electrically activatable recording layer capable of producing a positive image, the improvement wherein said recording layer comprises a transition metal complex selected from the group consisting of Group VIIIB and Group IB metal complexes and a film forming ionic polymer that is capable of undergoing an imagewise reorientation upon exposure to electric current and as a result of said exposure, development of said metal complex in the exposed areas of said recording layer is restricted.

4,435,491

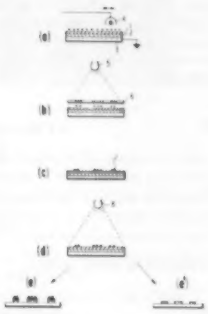
ELECTROPHOTOGRAPHIC PROCESS FOR THE PRODUCTION OF LITHOGRAPHIC PRINTING PLATES AND LIGHT-SENSITIVE MATERIALS FOR USE THEREIN

Takashi Kitamura, Chiba, and Hiroshi Kokado, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 25, 1981, Ser. No. 324,940

Claims priority, application Japan, Nov. 27, 1980, 55-165938

Int. Cl.³ G03G *13/28*

U.S. Cl. 430—49 **13 Claims**

1. A process for producing a lithographic printing plate using a light-sensitive material comprising an electrically conductive support having a hydrophilic surface, and a positive working light-sensitive layer and a photoconductive insulative layer containing an alkali-soluble resin on the support, said process comprising the steps of:

(A) forming an electrophotographic latent image on the photoconductive layer of the light-sensitive material;

(B) developing the latent image with a liquid developer containing developer particles which are opaque to light having a wavelength to which the positive working light-sensitive layer is sensitive;

(C) exposing to light the positive working light-sensitive layer through the developed image obtained in step (B); and

(D) selectively removing with an alkali solution the area of the positive working light-sensitive layer not bearing the developed image together with areas corresponding to said areas of the positive working light-sensitive layer not bearing the developed image of the photoconductive layer; wherein:

the positive working light-sensitive layer and the photoconductive insulative layer are provided on the support as a unit layer, or are individually provided in that order; and the photoconductive insulative layer is substantially chargable either positively or negatively, and contains said alkali-soluble resin in such an amount as to not inhibit the selective removal of the positive working light-sensitive layer in step (D).

4,435,492

COMPLEX TYPE ELECTROPHOTOGRAPHIC PLATE AND ELECTROPHOTOGRAPHIC METHOD USING THE SAME

Shigeo Suzuki, Hitachi; Atsushi Kakuta, Hitachiota; Yasuki Mori, and Hirosada Morishita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 87,820, Oct. 24, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,957

Claims priority, application Japan, Oct. 27, 1978, 53-131523; Nov. 8, 1978, 53-136695

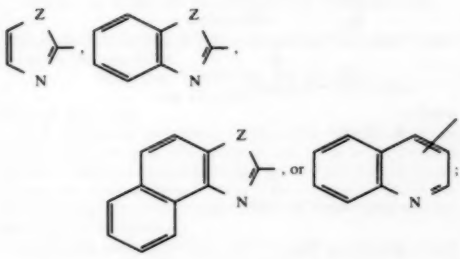
Int. Cl.[3] **G03G** *5/06, 5/14*

U.S. Cl. 430—58 **20 Claims**

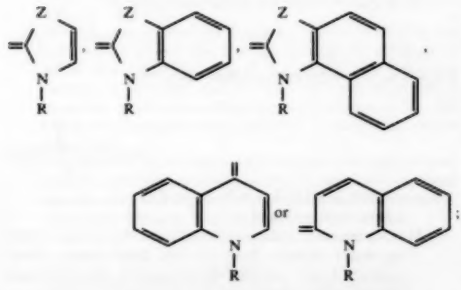
1. A complex type electrophotographic plate comprising an electroconductive support; a first layer, adhered to the support, of a charge generating material, said first layer having a thickness of 0.1 to 5 μm; and a second layer, superposed on the first layer, of a homogeneous mixture of a charge transport material and an insulating resinous binder therefor, said second layer having a thickness of 5 to 100 μm being substantially transparent to light of a wavelength of 4200 to 8000 Å, and said charge transport material being at least one member selected from the group consisting of nonionic compounds represented by the general formula:

$$X—(CH=CH)_n—CH=Y$$

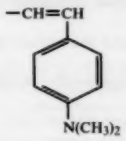
wherein X is a heterocyclic group of the formula:



Y is a heterocyclic group of the formula:



these heterocyclic groups may be substituted by one or more lower alkyl groups, halogen atoms, or phenyl groups; Z is an oxygen, sulfur or selenium atom; R is an alkyl group having 1 to 7 carbon atoms; n is an integer of 1 or 2; and one hydrogen atom in the group of the formula $—(CH=CH)_n—$ may be substituted by an alkyl group having 1 to 4 carbon atoms, a halogen atom, a phenyl group, a styryl group, a group of the formula $—N(CH_3)_2$, $—N(C_2H_5)_2$ or $—N(C_3H_7)_2$, an alkoxy group having 1 to 4 carbon atoms, or a group of the formula:



4,435,493

POROUS REUSABLE ZNO ELECTROPHOTOGRAPHIC ELEMENT

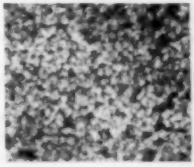
Jan A. de Putter, and Paul J. H. Tummers, both of Velden, Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Dec. 10, 1981, Ser. No. 329,407

Claims priority, application Netherlands, Jan. 15, 1981, 8100163

Int. Cl.[3] **G03G** *5/087*

U.S. Cl. 430—87 **6 Claims**



1. A reusable electrophotographic element comprising a substrate suited for use in electrophotography and a photoconductive layer containing sensitized zinc oxide particles in admixture with binding agents that are mutually incompatible, including a first binding agent that has a higher affinity to zinc oxide than a second of said binding agents and is largely deposited on said zinc oxide particles, said first binding agent being a macromolecular compound having an average molecular weight of at least 12,000 and being present in said layer in an amount of 1.5 to 9% by weight calculated on the zinc oxide particles, and the amount of said second binding agent in said layer being substantially larger than that of said first binding agent, said layer being substantially porous and having a negative charge density of at most 1 m Coulomb per m^2 and consisting essentially of agglomerates formed in situ in a matrix consisting essentially of said second binding agent, said agglomerates being of between 2.5 and 6 μm in diameter and being stuck together by portions of said second binding agent and each consisting essentially of a collection of said zinc oxide particles enveloped in a body of said first binding agent.

4,435,494

PROCESS FOR DEPOSITING MAGNETIC TONER MATERIAL ON ELECTROSTATIC LATENT IMAGES

Ryuji Goto, Kumagaya; Keitaro Yamashita, Kodama, and Koji Noguchi, Saitama, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 5, 1982, Ser. No. 355,255

Int. Cl.[3] **G03G** *13/09*

U.S. Cl. 430—122 **6 Claims**

1. A process for depositing single component magnetic toner material on electrostatic latent images formed on an image bearing member and characterized by a dark voltage, comprising the steps of:

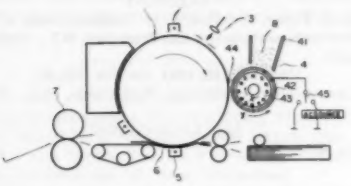
Providing a magnet roll adjacent the image bearing member, the magnet roll including a cylindrical rotatable shell of non-magnetic material and a rotatable permanent magnet member positioned coaxially within the shell, the rotat-

able permanent magnet member having on its outer periphery a plurality of magnetic poles of alternating polarity;

supplying magnetic toner material onto the surface of the shell of the magnet roll;

rotationally advancing the image bearing member in relation to the magnet roll;

rotating both the shell and the permanent magnet in the same direction to form an A.C. magnetic field for advancing the magnetic toner material to a contacting area with the image bearing member, the A.C. magnetic field having a frequency of greater than one per millimeter of the advancing of the image bearing member in relation to the magnet roll;



subjecting the magnetic toner material in the contacting area to the A.C. magnetic field; and

subjecting the magnetic toner material in the contacting area to an A.C. electrical field to render the toner substantially conductive, said A.C. electrical field having a peak voltage which is greater than the dark voltage of the latent images but less than 3,200 volts and having a frequency which is greater than v/0.3 where v is the advancing speed in millimeter/second of the image bearing member in relation to the magnet roll.

4,435,495

RELEASE OF PHOTOGRAPHIC REAGENTS WITH 3-PYRAZOLIDONE DEVELOPING AGENTS

Philip T. S. Lau, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 207,812, Nov. 17, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,713

Int. Cl.³ G03C 5/54

U.S. Cl. 430—218 **21 Claims**

1. A photographic assemblage for producing a dye image wherein an imagewise pattern of diffusible dye and an imagewise pattern of photographic reagent are formed by means of an oxidized 3-pyrazolidone developing agent, the assemblage comprising

(a) a support bearing at least one silver halide emulsion layer having associated therewith a dye image-providing material which is capable of providing an imagewise pattern of diffusible dye as a function of silver halide development;

(b) a photographic reagent releasing compound comprising an acyclic or cyclic compound in which the photographic reagent is linked, through a hetero atom, to a carbon atom which is adjacent to or in conjugation with a carbonyl group or an imino group;

(c) a dye image receiving layer;

(d) an alkaline processing composition and means for discharging same within the assemblage; and

(e) a 3-pyrazolidone developing agent which in its oxidized form is capable of oxidizing, under alkaline conditions, the photographic reagent releasing compound to cleave the hetero atom from the carbon atom to which it is linked and thereby release the photographic reagent;

the assemblage being free of color developing agent.

4,435,496

PHOTOPOLYMER CLEAVAGE IMAGING SYSTEM

John E. Walls, Wiesbaden Biebrich, Fed. Rep. of Germany, and Tulay Duyal, Englishtown, N.J., assignors to American Hoechst Corporation, Somerville, N.J.

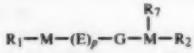
Filed Sep. 22, 1982, Ser. No. 421,685

Int. Cl.³ G03C 1/727

U.S. Cl. 430—285 **9 Claims**

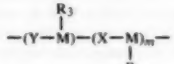
1. A photosensitive composition comprising

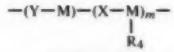
(a) a polymer of the formula

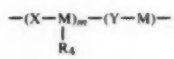


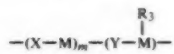
Wherein:

E is selected from the group consisting of one or more of:

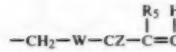








R_1, R_2 is



R_5 is H_1 or CH_3

R_6 is H, aryl, alkyl, aralkyl or phenoxy phenyl

W is —O— when Z is =O or is absent when Z is H_2

Z is H_2 or =O

R_3 is selected from the group consisting of

$-CH_2I$, $-CH_2Cl$, $-CH_2Br$ or R_1.

where q=0 to 3; and

M is an aromatic radical selected from the group consisting diaryl aliphatic hydrocarbon, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones; and

$R_4=R_3$

G=X or Y

$R_7=R_4$ when S=X or is absent when S=Y

m=1 to 3

p=1 to 8

$Y=-CH_2OCH_2-$

$X=-CH_2-$; and

(b) a free radical generating photosensitizer in an amount effective to cause the cleavage of said part (a) polymer upon exposure to actinic radiation.

4,435,497

CARBOXYL-CONTAINING COMPOSITIONS AND THEIR POLYMERIZATION

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,601
Claims priority, application United Kingdom, Jun. 19, 1981, 8119036; Mar. 24, 1982, 8208667
Int. Cl.³ G03C 1/68; C08F 2/46, 4/00; C08G 75/04
U.S. Cl. 430—288 7 Claims

1. A polymerizable composition comprising

(a) a compound containing in the molecule

(i) at least one group selected from acryloyloxy and methacryloyloxy groups,

(ii) at least one group selected from allyl, methallyl, and 1-propenyl groups each of which is attached, either directly or through an oxygen atom or an oxycarbonyl group (—OCO—), to a carbon atom which forms part of an aromatic or cycloaliphatic nucleus, and

(iii) at least one carboxylic acid (—COOH) group,

(b) a compound containing, per molecule, at least two mercaptan groups directly attached to an aliphatic carbon atom or atoms, in a proportion as to supply at least 0.8 such mercaptan group per group selected from allyl, methallyl and 1-propenyl groups in (a) but less than 1.0 such mercaptan group per group selected from acryloyl, methacryloyl, allyl, methallyl, and 1-propenyl groups in (a).

4,435,498

MANUFACTURE OF WAFER-SCALE INTEGRATED CIRCUITS

Alan G. Baillie, Stirling, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 7, 1981, Ser. No. 328,339
Int. Cl.³ G03C 5/00
U.S. Cl. 430—318 1 Claim

1. A method of metalizing a wafer scale integrated circuit having a plurality of integrated circuit areas on a common substrate with interconnection between said plurality of circuit areas, said method using a wafer scale integrated circuit initially having a layer of metalization and a layer of photoresist, the method comprising:

irradiating said photoresist layer through a step and repeat optical mask which will allow the through passage of radiation to only those areas of metalization for each of said plurality of integrated circuit areas, each said area of metalization having conductors, said photoresist being a negative photoresist

irradiating said photoresist layer through a reticle optical mask which allows the through passage of radiation to define only global line areas of metalization for providing connection between said plurality of integrated circuit areas, said global lines connecting to said conductors, said reticle mask opaque in said plurality of integrated circuit areas; and,

etching said irradiated wafer scale integrated circuit to leave a pattern of metal providing electrical connection for both said plurality of integrated circuit areas and the electrical connection between said integrated circuit areas.

4,435,499

PHOTOTHERMOGRAPHIC SILVER HALIDE MATERIAL AND PROCESS

John W. Reeves, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,506
Int. Cl.³ G03C 5/16, 1/02
U.S. Cl. 430—350 49 Claims

1. In a photothermographic element comprising a support bearing in reactive association, photosensitive silver halide grains and a photosensitive silver halide processing agent, the improvement wherein;

at least 50% of the projected area of the photosensitive silver halide grains is provided by thin tabular grains having an average grain thickness of less than 0.3 microns.

4,435,500

METHOD FOR DEVELOPING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Okutsu; Nobuyuki Iwasaki, and Shunji Takada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 31, 1982, Ser. No. 413,315
Claims priority, application Japan, Aug. 31, 1981, 56-136267
Int. Cl.³ G03C 5/38
U.S. Cl. 430—419 7 Claims

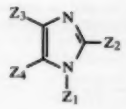
1. A method for processing a silver halide photographic light-sensitive material, comprising the steps of:

(a) providing a silver halide photographic light-sensitive material comprising a support having thereon a surface latent image type silver halide emulsion and a silver halide emulsion containing fogged nuclei inside the grains;

(b) exposing the photographic material to light; and

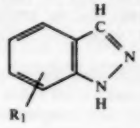
(c) developing the exposed photographic material in a developing solution comprising:

(i) a silver halide solvent, wherein said silver halide solvent is an imidazole derivative represented by the formula:

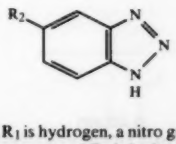


wherein Z_1, Z_2, Z_3 and Z_4 independently represent hydrogen, an alkyl group having 5 or less carbon atoms, a hydroxyalkyl group having 5 or less carbon atoms or an alkenyl group having 5 or less carbon atoms; and

(ii) a compound represented by the following general formula (I) or (II):



(I)



(II)

wherein R_1 is hydrogen, a nitro group, a cyano group or a halogen atom; and R_2 is hydrogen, a halogen atom or an alkyl group.

4,435,501

CONTROLLED SITE EPITAXIAL SENSITIZATION

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,920, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,855
Int. Cl.³ G03C 1/02
U.S. Cl. 430—434 111 Claims

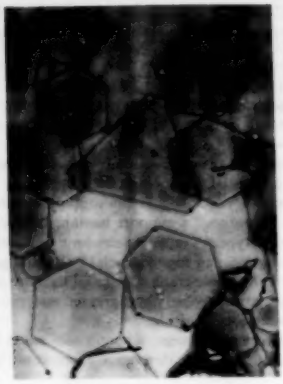
1. A tabular grain silver halide emulsion comprised of

a dispersing medium and

silver halide grains, wherein at least 50 percent of the total projected area of said silver halide grains is provided by tabular silver halide grains having a thickness of less than

0.3 micron, a diameter of a least 0.6 micron, and an average aspect ratio of greater than 8:1,

said tabular silver halide grains being bounded by opposed, substantially parallel {111} major crystal faces, and



silver salt epitaxially located on and substantially confined to selected surface sites of said tabular grains.

4,435,502

USE OF KETAL BLOCKED QUINONES TO REDUCE POST-PROCESS D-MIN INCREASE IN POSITIVE REDOX DYE-RELEASING IMAGE TRANSFER SYSTEMS

Noel R. Vanier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 392,502, Jun. 28, 1982. This application May 2, 1983, Ser. No. 490,600

Int. Cl.³ G03C *1/40, 5/30*

U.S. Cl. 430—489 **5 Claims**

1. In a photographic processing composition comprising an aqueous alkaline solution and a silver halide developing agent, the improvement wherein said composition also contains a ketal blocked quinone which is soluble therein.

4,435,503

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Keiji Mihayashi; Tadashi Ogawa, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 13, 1982, Ser. No. 397,746

Claims priority, application Japan, Jul. 13, 1981, 56-109056

Int. Cl.³ G03C *5/24*

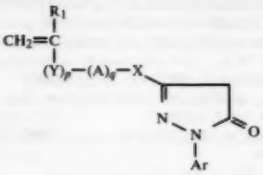
U.S. Cl. 430—548 **21 Claims**

1. A silver halide color photographic light-sensitive material, comprising:

a support base;

a silver halide emulsion layer on the base;

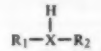
a 4-equivalent magenta color image forming polymer coupler latex being a polymer or copolymer having a repeating unit derived from a monomer coupler represented by formula (III)



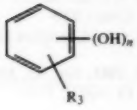
(III)

wherein R represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms, or a chlorine atom; X represents —CONH—, —NH—, —NHCONH— or —NHCOO—; Y represents —CONH— or —COO—; A represents an unsubstituted or substituted alkylene group containing from 1 to 10 carbon atoms in the alkylene moiety or an unsubstituted or substituted phenyl group; Ar represents an unsubstituted or substituted phenyl group; p represents 0 to 1; and q represents 0 or 1; and

a compound capable of reacting with and fixing formaldehyde gas, and being represented by the following general formulae (I) or (II):



(I)



(II)

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an acyl group, an alkoxycarbonyl group, a carbamoyl group or an amino group, or R_1 and R_2 may be bonded each other to form a ring and at least one of R_1 and R_2 is an acyl group, an alkoxycarbonyl group, a carbamoyl group or an amino group; and X represents —CH— or —N—; R_3 represents an alkyl group, a substituted alkyl group, an aryl group or a substituted aryl group or an atomic group necessary to form a monocyclic ring fused to the benzene ring; and n represents an integer of not less than 2, and has not more than 300 of an equivalent molecular weight per unit of an active hydrogen atom as defined below:

$$\text{Equivalent Molecular Weight} = \frac{\text{Molecular Weight}}{\text{Number of Active Hydrogen Atoms in Molecule}}$$

4,435,504

IMMUNOCHROMATOGRAPHIC ASSAY WITH SUPPORT HAVING BOUND "MIP" AND SECOND ENZYME

Robert F. Zuk, Menlo Park, and David J. Litman, Mountain View, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jul. 15, 1982, Ser. No. 398,505

Int. Cl.³ G01N *33/54, 33/52, 31/08, 33/58*

U.S. Cl. 435—7 **12 Claims**

1. A method for determining the presence of an analyte in a sample suspected of containing said analyte,

said method employing:

(A) an immunochromatograph having a porous support

permitting solvent travel and a plurality of a specific binding pair member ("mip") and a second enzyme, which mip and second enzyme are non-diffusively and uniformly bound to said support and extend a distance away from a first end of said support to define an immunosorbing zone; and

(B) a labeled mip, where said labeled mip is chosen to bind to said immunosorbing zone in relation to the portion of said immunosorbing zone in which said analyte is bound to define a border related to the amount of analyte present in said sample, said label being an enzyme which is part of a signal producing system including a first enzyme, wherein said first and second enzymes are related by the substrate of one being the product of the other, and which system produces a detectable signal of electromagnetic radiation defining said border;

said method comprising:

contacting said immunochromatograph: (1) at said first end with sample containing solvent for a time sufficient for at least a portion of said solvent to traverse said immunosorbing zone; and (2) with labeled mip containing solvent, where said labeled mip binds in said immunosorbing zone in relation to the analyte bound in said immunosorbing zone, and where steps (1) and (2) are concurrent or consecutive; and

determining the border defined by said labeled mip by means of said signal producing system, by contacting said immunosorbing zone with the remaining members of said signal producing system, where the position of the border relates to the amount of analyte present in said sample.

4,435,505

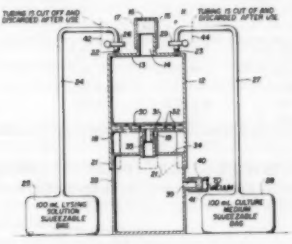
LYSIS FILTRATION CULTURE CHAMBER

Charles H. Zierdt, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 330,020, Dec. 11, 1981, Pat. No. 4,410,630. This application Sep. 28, 1982, Ser. No. 426,141

Int. Cl.³ C12Q *1/04*

U.S. Cl. 435—34 **15 Claims**



1. An apparatus for blood sample treatment involving lysis, filtration and culture, said apparatus comprising an upper chamber for receiving a blood sample, a first flexible bag containing lysing solution, a first flexible severable conduit connecting said first flexible bag to the upper chamber, a first removable clamp on said first flexible conduit, a second flexible bag containing culture medium, a second flexible severable conduit connecting said second flexible bag to said upper chamber, a second removable clamp on said second flexible conduit, said upper chamber having a bottom wall provided with a depending discharge spout, a filter member mounted in said upper chamber above said bottom wall, a lower chamber below said upper chamber and having a top wall provided with a tube member telescopically engaged on said discharge spout, and vacuum conduit means connected to said lower chamber.

14. A method of treating blood samples involving lysis filtration and culture comprising the steps of providing an upper chamber for receiving a blood sample, a lower chamber for receiving vacuum pressure, selectively providing a blood sample to said upper chamber, selectively providing lysing solution to said upper chamber, providing filter means in said upper chamber at the interface between said upper chamber and said bottom chamber, providing a removable mounting of said upper chamber on said lower chamber, mixing the blood sample and the lysing solution in said upper chamber, incubating said mixture for a predetermined period of time to permit complete blood lysis, applying vacuum pressure to said lower chamber while said upper and lower chambers are sealingly fitted together to thereby cause filtration through said filter means, separating said upper and lower chambers after completion of said filtration step, sealig said upper chamber containing the portions of said blood sample not filtered through to said lower chamber on said filter member, sealing said upper chamber, providing culture medium to said upper chamber, and performing normal blood culture analysis on said sealed upper chamber.

4,435,506

ISOLATION OF SUPEROXIDE DISMUTASE

David E. Jackson, Bourbonnais, and Frank J. Mannuzza, Peotone, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 13, 1982, Ser. No. 408,038

Int. Cl.³ C12N *9/02, 9/08*

U.S. Cl. 435—189 **7 Claims**

1. A method of isolating superoxide dismutase from red blood cells in the presence of proteinaceous impurities, which comprises contacting said red blood cells with a water-miscible organic solvent, at a pH in the range of 5 to 8, and a temperature of from 15° to 50° C. to denature said impurities, removing said impurities and obtaining therefrom purified superoxide dismutase.

4,435,507

PROCESS AND DEVICE FOR PREPARATION OF CELL SAMPLES FOR CYTOLOGICAL TESTS

Björn G. Stenkvist, Döbelnsgatan 13, S-752 37 Uppsala, Sweden

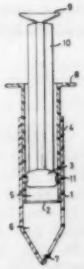
PCT No. PCT/SE81/00199, § 371 Date Feb. 18, 1982, § 102(e) Date Feb. 18, 1982, PCT Pub. No. WO82/00200, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 30, 1981, Ser. No. 355,588

Claims priority, application Sweden, Jul. 8, 1980, 8005023

Int. Cl.³ C12Q *1/36, 1/42;* A01N *1/02*

U.S. Cl. 435—262 **8 Claims**



1. Process for preparation of cell samples for cytological tests of exfoliated cells, in which the cell sample is in the form of a slurry in solution, characterized in that the slurry is introduced into a first chamber provided with a wall with a large number of holes with a cross section of 10–100 μm and in communication with a second chamber, and that said solution under the influence of a pressure differential between the first and the second chambers is made to pass through the wall

provided with holes one or more times, and that the material from the second chamber is used for the preparation of smears on a slide.

4,435,508

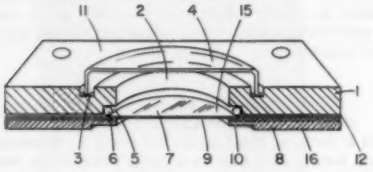
TISSUE CULTURE VESSEL

Michael G. Gabridge, Trudeau Rd., Saranac Lake, N.Y. 12983

Filed Nov. 20, 1981, Ser. No. 323,653

Int. Cl.³ C12M *3/00*

U.S. Cl. 435—284 **5 Claims**



1. A tissue culture vessel for the growth of cellular material comprising:

a. rigid upper plate of autoclavable, nontoxic material having a first aperture therethrough, a circular channel concentric with and remote from the first aperture and being accessible from the top surface of the upper plate, and a groove concentric with and adjacent to the first aperture and accessible from the bottom surface of the upper plate;

b. a rigid base plate of autoclavable material affixed to the upper plate and having a second aperture therethrough being substantially mutually aligned with the first aperture, the bottom surface of the base plate having an inset concentric with the second aperture and being accessible from the bottom surface of the base plate;

c. an interchangeable nontoxic growth substrate situated between the bottom surface of the upper plate and the top surface of the bottom plate and extending at least across the second aperture, providing an optically nondistorting surface for the use of high magnification microscopy visualization of the cellular material contained therein;

d. a nontoxic gasket located in the groove and in an abutting relationship with the interchangeable growth substrate and the upper plate; and

e. removeable cover situated in the circular channel and extending over and enclosing the first aperture.

4,435,509

ASSAYS, INCLUDING IMMUNOASSAYS WITH FITC LABEL ACTIVATED BY SODIUM HYPOCHLORITE

Fritz Berthold, Pforzheim, and Helmut Kubisiak, Wildbad, both of Fed. Rep. of Germany, assignors to Laboratorium Prof. Dr. Rudolf Berthold, Wildbad, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,563

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 8027422

Int. Cl.³ G01N *33/52, 33/54, 33/58, 33/68*

U.S. Cl. 436—518 **14 Claims**

1. Process for carrying out an analytical determination of the presence of a substance by means of chemiluminescence, comprising employing fluorescein isothiocyanate (FITC) as a labelling agent, triggering a chemiluminescence reaction by adding an aqueous solution of sodium hypochlorite, and measuring the emission of light.

4,435,510

PROTECTION OF GRAPHITE ELECTRODES

Dennis Greensmith, Tamworth; Roderic H. Hammerton, Bednall; Colin J. Wall, Birmingham, all of England; Dietger Dunkelmann, Bocholt, Fed. Rep. of Germany; Helmut Jaunich, Raesfeld, Fed. Rep. of Germany, and Josef Schiffarth, Bocholt-Barlo, Fed. Rep. of Germany, assignors to Foseco Trading A.G., Chur, Switzerland

Filed Aug. 3, 1982, Ser. No. 404,906

Claims priority, application United Kingdom, Mar. 20, 1982, 8208226

Int. Cl.³ C03C *5/00*

U.S. Cl. 501—90 **11 Claims**

1. Particulate matter for the protection of a graphite electrode of an electric arc furnace to reduce loss of graphite by oxidation from the side of the electrode, said matter comprising particles each containing both a graphite-wetting fusible matrix material having a melting point below 1000° C. and a refractory filler, said particles comprising 30 to 80% by weight of refractory filler and 20 to 70% by weight of graphite-wetting fusible matrix material, the maximum particle size of the particles of the particulate matter being 0.5 mm and not more than 10% by weight of the matter comprising particles having a particle size of 0.1 mm or less.

4,435,511

GLASSES SUITABLE FOR SEALING FERRITES

Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 13, 1982, Ser. No. 416,821

Int. Cl.³ C03C *3/08, 3/10*

U.S. Cl. 501—22 **1 Claim**

1. A glass suitable for sealing to ferrites such as manganese-zinc ferrites and consisting essentially of a composition which would result by mixing from 20 to 80 weight percent of glass A with 80 to 20 weight percent of glass B and melting the mixture to form a homogeneous glass:

Glass A		Glass B	
	Weight Percent		Weight Percent
SiO_2	1.8–2.2	SiO_2	67–70
B_2O_3	14–16.5	Li_2O	14–17
PbO	69–72	Al_2O_3	4–5.5
ZnO	8.2–9.2	CaO	9–12
BaO	2.7–3.5		

said glass having a coefficient of thermal contraction from 15° C. below the annealing point to room temperature of from 106 to 115×10^{-7}/°C.

4,435,512

PROCESS FOR PRODUCING CORDIERITE CERAMIC PRODUCTS

Kazuyuki Ito, Nishio; Masami Ouki, Nagoya; Naoto Miwa, Tsushima; Osami Kamigaito, Nagoya; Haruo Doi, Nagoya, and Yoshiharu Hirose, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagakute, both of, Japan

Filed Nov. 24, 1981, Ser. No. 324,571

Claims priority, application Japan, Nov. 28, 1980, 55-166643

Int. Cl.³ C04B *35/04, 35/10*

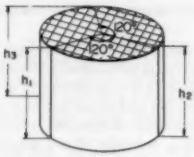
U.S. Cl. 501—32 **3 Claims**

1. In a process for producing a cordierite ceramic product comprising the steps of blending the starting cordierite composition, molding the blended composition, and drying and sintering the molded composition, the improvement comprising using as the starting cordierite composition a composition comprising:

(a) a clay formulation having a cordierite composition com-

prising kaolin, talc, and aluminum oxide and/or an aluminum compound which is convertible into aluminum oxide;

(b) a glass having a cordierite composition present in an amout of from about 10% to about 90% by weight, based on the total weight of said components (a) and (b);



(c) from about 3% to about 8% by weight of an organic binder based upon the total weight of the starting cordierite composition; and

(d) from about 18% to about 23% by weight of water based on the total weight of the starting cordierite composition.

4,435,513

SINTERED BODIES OF ALUMINUM NITRIDE

Katsutoshi Komeya, Oiso; Akihiko Tsuge, Yokohama, and Hiroshi Inoue, Kawaguchi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 21, 1982, Ser. No. 420,842

Claims priority, application Japan, Sep. 28, 1981, 56-152141

Int. Cl.³ C04B *35/52, 35/58*

U.S. Cl. 501—96 **7 Claims**

1. A sintered body of aluminum nitride obtained by sintering a powder mixture consisting essentially of

(b) from about 0.047 to about 5.66 parts by weight (calculated in terms of calcium oxide, barium oxide, strontium oxide or mixtures thereof) of a powder of at least one compound selected from the group consisting of calcium oxide, barium oxide, strontium oxide and a compound capable of being converted into one of these oxides by sintering,

(c) an amount more than 0 and up to about 6.54 parts by weight (calculated in terms of carbon) of carbon powder or powder of a compound capable of being converted into carbon by sintering, sufficient in combination with ingredient (b) to increase the density and thermal conductivity of the body; and

(a) aluminum nitride powder being the balance,

the total amount of ingredients (a), (b) and (c) being 100 parts by weight.

4,435,514

CHROMIA MAGNESIA REFRACTORY

Stephen D. Hartline, Millbury, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jul. 6, 1982, Ser. No. 395,550

Int. Cl.³ C04B *35/04, 35/12*

U.S. Cl. 501—117 **9 Claims**

1. A refractory product consisting essentially of grains of cofused chromia and magnesia, bonded with an in situ formed microcrystalline bond selected from the group consisting of chromia and chromia-magnesia.

4,435,515

CATALYST FOR THE CONVERSION OF CARBO-METALLIC CONTAINING OILS

Oliver J. Zandona, Ashland; William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, and Hubert W. Beck, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 27, 1981, Ser. No. 296,679

Int. Cl.³ B01J *29/08*

U.S. Cl. 502—65 **2 Claims**

1. A catalyst composition for cracking hydrocarbons boiling above 650° F. and comprising carbo-metallic impurities of naphthenes and asphaltenes comprising at least about 35 wt % of a calcined rare earth exchanged "Y" crystalline faujasite dispersed in a clay containing matrix material, said catalyst composition providing a pore volume of at least 0.35 cc/g, a matrix material providing a substantial amount of pore size openings within the range of 500 to 2000 A, said catalyst composition comprising a residual sodium content of less than 0.30 wt % and said catalyst composition being rare earth exchanged during preparation to provide a lanthanum to cerium ratio greater than 1.3:1.

4,435,516

ACTIVITY ENHANCEMENT OF HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,037

Int. Cl.³ B01J *29/28*

U.S. Cl. 502—71 **8 Claims**

1. A method for enhancing the activity of a high silica-containing crystalline zeolite having a silica-to-alumina ratio greater than 500 which comprises contacting said material with an ammoniacal solution of an alkali metal aluminate for a period of time ranging from ¼ hour to 5 days at a temperature of from 20° to 50° C. and at a pH of at least 10.

3. A method of enhancing the activity of a high silica zeolite of the ZSM-5 type having a silica-to-alumina ratio of at least 500 which comprises contacting said zeolite with an ammoniacal solution of an alkali metal aluminate at a temperature of from 20° to 50° C., for a period of time ranging from ¼ day to 5 days and at a pH of at least 10.

4,435,517

COBALT HYDROFORMYLATION CATALYSTS

Leslie H. Simons, and David C. Alexander, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,194

Int. Cl.³ B01J *29/14, 29/24*

U.S. Cl. 502—74 **10 Claims**

1. A hydroformylation catalyst which is prepared by:

(a) vaporizing metallic cobalt(0);

(b) cocondensing the metallic cobalt(0) with a solvent to form a metallic cobalt(0)-solvent matrix;

(c) melting the metallic cobalt(0) and solvent matrix and thereby forming a metallic cobalt(0)-solvent slurry;

(d) absorbing the metallic cobalt(0)-solvent slurry on dry, oxygen free porous catalyst support;

(e) removing the solvent and thereby producing a catalyst which has from about 0.1 wt % to about 5 wt % of metallic cobalt(0) deposited thereon.

5. A process for the preparation of hydroformylation catalyst containing metallic cobalt(0) which comprises:

(a) vaporizing metallic cobalt(0);

(b) cocondensing the metallic cobalt(0) with a solvent to form a metallic cobalt(0)-solvent matrix;

(c) melting the metallic cobalt(0) and solvent matrix and thereby forming a metallic cobalt(0)-solvent slurry;

(d) absorbing the metallic cobalt(0)-solvent slurry on dry, oxygen-free porous catalyst support,

(e) removing the solvent and thereby producing a catalyst

which has from about 0.1 wt % to about 5 wt % of metallic cobalt(0) deposited thereon.

8. The process of claim 5 wherein the porous catalyst support is a metallic alumino-silicate zeolite having pore diameters in the range of about 3 angstroms to about 15 angstroms.

4,435,518

POLYMERIZATION CATALYST

B. Timothy Pennington, Sulphur, La.; Paul V. Roling, Spring, Tex., and John T. T. Hsieh, Warren, N.J., assignors to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,287
Int. Cl.³ C08F 4/68
U.S. Cl. 502—107 **22 Claims**

1. A catalyst composition consisting essentially of the product obtained by:

(1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water,

(2) reacting the surface hydroxyl groups of the support with at least a substantially stoichiometric amount of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3, and y and z both represent values of 0 to 2, the sum of which is not greater than $3-x$,

(3) reacting the thus-treated support with at least about 0.001 mol, per mol of organometallic compound, of at least one vanadium compound corresponding to a formula selected from $(RO)_nVOX_{3-n}$ and $(RO)_mVX_{4-m}$, in which formulas R represents a C_1–C_{18} monovalent hydrocarbon radical that is free of aliphatic unsaturation, X is Cl or Br, n has a value of 0 to 3, and m has a value of 0 to 4, and

(4) reacting the product of step 3 with at least about 0.1 mol, per mol of organometallic compound, of an alcohol containing 1 to 18 carbon atoms.

4,435,519

NOVEL CATALYST COMPOSITION

Richard L. Veazey, East Windsor, N.J., and B. Timothy Pennington, Sulphur, La., assignors to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,289
Int. Cl.³ C08F 4/68
U.S. Cl. 502—107 **15 Claims**

1. A catalyst composition consisting essentially of the product obtained by:

(1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water,

(2) reacting the surface hydroxyl groups of the support with at least a substantially stoichiometric amount of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3, and y and z both represent values of 0 to 2, the sum of which is not greater than 3-x, and

(3) reacting the thus-treated support with at least about 0.001 mol, per mol of organometallic compound, of at least one vanadium compound prepared by reacting one molar proportion of $VOCl_3$ and/or $VOBr_3$ with about 0.5 to 1 molar proportion of a diol corresponding to the formula HO-R-OH, wherein R is a divalent hydrocarbon radical having a chain length of 2 to 16 carbon atoms.

4,435,520

CATALYST COMPOSITION

David E. Aylward, Madison, N.J., assignor to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,296
Int. Cl.³ C08F 4/68
U.S. Cl. 502—107 **17 Claims**

1. A catalyst composition consisting essentially of the product obtained by:

(1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water,

(2) reacting the surface hydroxyl groups of the support with at least about 0.5 mol, per mol of surface hydroxyl groups, of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3, and y and z both represent values of 0 to 2, the sum of which is not greater than 3-x, and

(3) reacting the thus-treated support with at least about 0.001 molar proportion, per mol of organometallic compound, of a vanadium component consisting essentially of a mixture of about 10–90 mol percent of $VOCl_3$ and, correspondingly, about 90–10 mol percent of VCl_4.

4,435,521

HETEROGENEOUS PROCESS FOR PREPARING VANADIUM PHOSPHORUS OXYGEN CONTAINING CATALYST COMPOSITION

Tai-Cheng Yang, Mahwah; Krishna K. Rao, Paterson, and I-der Huang, Upper Saddle River, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 24, 1982, Ser. No. 381,206
Int. Cl.³ B01J 27/14
U.S. Cl. 502—209 **9 Claims**

1. A process for preparing a catalyst composition comprising vanadium, phosphorus and oxygen capable of catalyzing the oxidation of hydrocarbons which comprises:

(a) admixing to form a heterogeneous suspension at least one pentavalent vanadium compound with at least one organic alcohol in a manner and under conditions sufficient to condition said vanadium compound and reduce at least a portion of the pentavalent vanadium to a +4 valence state;

(b) admixing at least one organic alcohol, said conditioned vanadium compound, and at least one phosphorus containing compound, in a manner and under conditions sufficient to form a heterogeneous suspension of a vanadium-phosphorus-oxygen containing catalyst precursor composition having a vanadium valence of from about 3.9 to about 4.7, and a phosphorus to vanadium atomic ratio of from about 0.5:1 to about 2:1;

(c) separating said catalyst precursor composition from said admixture; and

(d) activating said catalyst precursor composition in the absence of air alone by contacting it with an atmosphere comprising a mixture of air and at least one hydrocarbon.

4,435,522

METHOD OF PRODUCING A CATALYST FOR LIQUEFACTION OF COAL

Tsuneo Yoshii, 284-banchi, Jonboji-cho, Kashihara-shi, Nara; Toshitaka Ueda, 5-23, Yagi-cho 3-chome, Kashihara-shi, Nara, and Tsukasa Kuroda, 3-2, Yuzato 1-chome, Higashisumiyoshi-ku, Osaka, all of Japan

Filed Jul. 21, 1982, Ser. No. 400,422
Claims priority, application Japan, Aug. 3, 1981, 56-122211
Int. Cl.³ B01J 23/26
U.S. Cl. 502—319 **1 Claim**

1. A method of producing a catalyst for liquefaction of coal

comprising heat-treating a salt or oxide of molybdenum or an alloy steel containing at least 0.3 weight percent of molybdenum in the presence of an alkali and water in a carbon monoxide atmosphere at a temperature of 220° to 450° C., and after water rinse and drying, reducing the same in the presence of tetralin and/or a phenol compound in a hydrogen atmosphere at a temperature of 400° to 450° C.

4,435,523

PROCESS FOR MANUFACTURING ARTICLES OF FOAMED THERMOPLASTIC MATERIAL AND ARTICLE PRODUCED THEREBY

Giuseppe Ponzielli, Milan, Italy, assignor to Coulson Heel Inc., Hanover, Pa.

Filed Aug. 24, 1982, Ser. No. 410,952

Claims priority, application Italy, Sep. 25, 1981, 24159 A/81

Int. Cl.³ B29D 27/00

U.S. Cl. 521—51 **11 Claims**

1. A process for producing injection molded articles of foamed thermoplastic material comprising the steps of:

(A) injecting a molten mass of thermoplastic material containing a foaming agent into at least one mold cavity of an injection mold;

(B) after the elapse of a relatively brief period of time from step (A), introducing a refrigerated compressed gas into the mold cavity internally of the injected mass of material, while it is still at least internally molten;

(C) cooling said mass of material into an article utilizing said internally introduced gas;

(D) terminating step (B) and shortly thereafter opening the mold for removal of said article.

4,435,524

PROCESS FOR PREPARING SPHERICAL AND POROUS VINYL RESIN PARTICLES

Kornelius Dinbergs, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 299,741, Sep. 8, 1981, Pat. No. 4,360,651, which is a continuation-in-part of Ser. No. 258,854, Apr. 29, 1981, abandoned, which is a continuation of Ser. No. 150,841, May 19, 1980, abandoned. This application Nov. 18, 1982, Ser. No. 442,701

Int. Cl.³ C08V 9/28

U.S. Cl. 521—65 **24 Claims**

1. A process for producing spherical particles of polymer having a high porosity which comprises polymerizing in an aqueous medium, in a reaction vessel having an agitator position therein, one or more ethylenically unsaturated monomers having a terminal $CH_2{=}C<$ grouping in the form of discrete particles having a diameter in the range of about 30 microns to about 1000 microns, said aqueous medium containing a monomer-soluble free radical yielding catalyst, a dispersant comprising a substantially unneutralized, water-insoluble, crosslinked polymer of one or more carboxylic acid monomers with a polyunsaturated crosslinking monomer havng a plurality of terminally unsaturated polymerizable groups, at least one nonpolyethylene oxide containing surfactant selected from the group consisting of the sorbitan ester family, glycerol ester family, and polyglycerol ester family, and at least one polyethylene oxide containing surfactant selected from the group consisting of polyoxyethylene alkylphenols, polyoxyethylene alcohols, polyoxyethylene esters of fatty acids, polyoxyethylene alkylamines, and polyoxyethylene alkylamides and polyoxyethylene sorbitan ester, conducting the polymerization at a temperature in the range of about 0° C. to about 150° C. with vigorous agitation in said aqueous medium throughout the entire polymerization reaction.

4,435,525

REACTION OF CARBONYLHYDRAZINES AND ORGANIC PEROXIDES TO FOAM UNSATURATED POLYESTER RESINS

Ernest R. Kamens, Tonawanda, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 431,545, Sep. 30, 1982, Pat. No. 4,393,148. This application Mar. 28, 1983, Ser. No. 479,300

Int. Cl.³ C08V 9/08, 9/10

U.S. Cl. 521—92 **14 Claims**

1. A foamable and curable composition consisting essentially of an admixture of a medium selected from the class consisting of (i) an unsaturated polyester and at least one polymerizable unsaturated monomer, (ii) polymethylmethyacrylate and at least one polymerizable unsaturated monomer, (iii) polyethers that are terminated by polymerizable unsaturated ester functions and at least one polymerizable monomer, and (iv) polymerizable monomers, said polymers having been dissolved or dispersed in said polymerizable monomers, a peroxide, at least one transition metal salt promoter wherein at least one of the metals is selected from the group consisting of iron and copper, and a carbonylhydrazine blowing agent.

4,435,526

PROCESS FOR THE MANUFACTURE OF UREA-FORMALDEHYDE/POLYURETHANE POLYMERS

Alan M. Wooler, Old Trafford, England, assignor to Abelard Management Services Limited, Manchester, England

Filed Sep. 29, 1982, Ser. No. 427,815

Claims priority, application United Kingdom, Nov. 6, 1981, 8133940; Sep. 13, 1982, 8226000

Int. Cl.³ C08G 18/14, 18/18, 18/54

U.S. Cl. 521—107 **6 Claims**

1. A process for the manufacture of flame-resistant polymer materials which comprises reacting together a stoichiometric excess of an organic polyisocyanate comprising di(isocyanatophenyl)methane or a mixture of di(isocyanatophenyl)methane with poly(isocyanatophenyl) polymethylenes, and an isocyanate-reactive polyether containing 4 to 6 hydroxyl groups to form a prepolymer and subsequently reacting the prepolymer with an aqueous solution of a urea-formaldehyde precondensate in the presence of a poly(haloalkyl) phosphate of a catalyst selected from the class consisting of di-N-morpholinodialkyl ethers, bis(dialkylamino)dialkyl ethers and tetraalkylalkylenediamines.

4,435,527

POLYESTER POLYMER POLYOLS MADE WITH POLYESTER POLYCARBONATES AND POLYURETHANES THEREFROM

Michael Cuscurida, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,506

Int. Cl.³ C08G 18/14

U.S. Cl. 521—173 **6 Claims**

1. A polyester polymer polyol made by the reaction of a polyester polycarbonate, a polyether polyol and an organic polyisocyanate wherein the combined portion of polyester polycarbonate and polyisocyanate is 10 to 40 wt. % of the polyether polyol portion, and the ratio of equivalents of polyester groups to equivalents of isocyanate groups ranges from 0.5 to 2.0.

4,435,528

CONCENTRATED EMULSIONS OF WATER-SOLUBLE POLYMERS

William G. Domina, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1981, Ser. No. 333,139
Int. Cl.³ C08L 33/02, 33/26
U.S. Cl. 523—332 14 Claims

1. A method for preparing a concentrated stable water-in-oil emulsion containing at least 40 weight percent of a water-soluble polymer which method comprises concentrating a stable preconcentrate water-in-oil emulsion containing a water-soluble polymer in an aqueous phase which is dispersed in a continuous oil phase, said preconcentrate emulsion containing (1) a smaller weight percent of water-soluble polymer than the weight percent thereof in the concentrated emulsion, (2) an emulsifying amount of a water-in-oil emulsifier and (3) an amount of an inverting surfactant sufficient to reduce the bulk viscosity of the preconcentrate emulsion, thereby forming the stable concentrated emulsion.

4,435,529

TANNIN-EPOXY REACTION PRODUCTS AND COMPOSITIONS THEREOF

Alan J. Kaylo, Glenshaw, and Nicholas T. Castellucci, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 11, 1982, Ser. No. 347,845
Int. Cl.³ C08L 63/02
U.S. Cl. 523—426 14 Claims

1. A composition of matter comprising an ungelled reaction product obtained by the heating of:

(A) a 1,2-epoxy material, and

(B) a tannin in an amount sufficient to provide an ungelled reaction product.

4,435,530

HEAT RESISTANT RESIN COMPOSITION

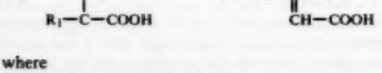
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 354,829, Mar. 4, 1982, abandoned. This application Oct. 22, 1982, Ser. No. 436,165
Int. Cl.³ C08L 67/06, 77/12
U.S. Cl. 523—512 17 Claims

1. A curable resinous composition comprising

(A) about 5 to 95 weight percent of an unsaturated polyester resin or an unsaturated polyesteramide resin, wherein said resins are terminated with a norbornene functional material so that substantially all the norbornene functional moieties are esterified

(B) about 95 to 5 weight percent of an unsaturated mixture consisting of 20 to 80 weight percent of an ethylenically unsaturated compound and 80 to 20 weight percent of a dicyclopentadiene or polycyclopentadiene bis or tris ester of a unsaturated polycarboxylic acid having one of the formulae



where

R_1 is $=CH_2$ or $=C(CH_3)-CH_3$

R_2 is hydrogen or $-CH_2-COOH$

R_3 is hydrogen when R_2 is a $-CH_2-COOH$ group, or $-COOH$.

4,435,531

EMULSION COMPOSITION CONTAINING CELLULOSE DERIVATIVE

Yasuharu Nakayama; Kenji Yamamoto; Toshiki Komatsuzawa; Hajime Sukejima, and Kazuo Nomoto, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Aug. 2, 1982, Ser. No. 404,053
Claims priority, application Japan, Aug. 4. 1981, 56-121360
Int. Cl.³ C08L 1/10
U.S. Cl. 524—37 22 Claims

1. A cellulose derivative-containing emulsion composition which is the product of emulsion polymerization of (A) at least one ethylenically unsaturated monomer in the presence of (B) a water-solubilized product of a cellulose derivative-modified vinyl copolymer having an acid value of from about 3 to about 150, said vinyl copolymer being obtained by graft-copolymerizing (1) an ethylenically unsaturated monomeric component composed of an ethylenically unsaturated acid (1-a) and another ethylenically unsaturated monomer (1-b) onto (2) a cellulose derivative.

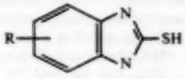
4,435,532

USE OF ZINC SALTS OF MERCAPTOBENZIMIDAZOLE AND DITHIOPHOSPHORIC ACID ESTERS FOR THE PREPARATION OF NITRILE RUBBER/POLYVINYL CHLORIDE MIXTURES

Joachim Thörmer, Leverkusen; Hans H. Bertram, Leichlingen; Otto Benn, Bergisch Gladbach, and Helmut Hurnik, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,529
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126402
Int. Cl.³ C08K 5/04, 5/34
U.S. Cl. 524—92 7 Claims

1. A process for stabilizing a mixture of (A) a copolymer of butadiene and acrylonitrile and (B) polyvinyl chloride or a copolymer of vinyl chloride and vinylidine chloride, vinyl acetate, ethylene, propylene, isobutylene or vinylidine fluoride which comprises adding to said mixture a stabilizing amount of (I) a zinc salt of a mercaptobenzimidazole of the formula



wherein

R is hydrogen or alkyl having 1 to 4 carbon atoms, (II) a zinc salt of di-C_1–C_9-alkyldithiophosphate or (III) a mixture thereof.

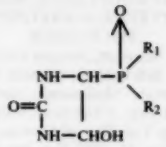
4,435,533

4-HYDROXY-5-(SUBSTITUTED PHOSPHINYL)ETHYLENEUREAS

Alexandros K. Tsolis, 171 Old National Rd., Arachovitika, and Ioannis A. Mikroyannidis, Navmahias Elis 48-52, both of Patra, Greece

Filed Jul. 30, 1981, Ser. No. 288,473
Int. Cl.³ C07F 9/65
U.S. Cl. 524—106 9 Claims

1. A compound of the formula:



wherein R_1 and R_2 are selected from the group consisting of alkoxy of 1 to 4 carbon atoms, cyclohexyloxy, phenoxy, alkoxy containing chlorine, alkoxy containing bromine and hydroxy.

5. A method of fire-proofing a polymeric material selected from the group consisting of cellulose, cellulose containing material, polyamides, polyurethanes, polyesters and polyacrylonitriles, which comprises incorporating into the polymeric material the compounds of claim 1 or 2.

4,435,534
COALESCENT-CONTAINING COATING COMPOSITION

Glenn C. Jones, and Larry J. Culver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,557
Int. Cl.³ C08K 5/10
U.S. Cl. 524—292 12 Claims

1. A coating composition comprising a latex of a normally solid organic addition polymer and a coalescing amount of at least one ether-ester solvent having the formula

where R represents hydrogen or an alkyl group of 1 to 4 carbon atoms, R′ represents a C_1–C_3 alkyl group, and n is 1 or 2.

4,435,535
ADIPIC ACID AS A SCORCH INHIBITOR FOR CARBOXYLATED RUBBERS

Donald C. Grimm, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 17, 1982, Ser. No. 379,242
Int. Cl.³ C08K 5/09
U.S. Cl. 524—321 6 Claims

1. An improved scorch resistant dried carboxylated nitrile rubber composition comprising: a dried carboxylated nitrile rubber and adipic acid which is distributed throughout said dried carboxylated nitrile rubber as a scorch inhibitor.

6. A process for improving the scorch resistance of a dried carboxylated nitrile rubber comprising, distributing throughout said dried carboxylated nitrile rubber adipic acid as a scorch inhibitor.

4,435,536
ONE-PACK COMPOSITION

Yasushi Kato, and Hisao Furukawa, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,274
Claims priority, application Japan, Apr. 17, 1981, 56-59002
Int. Cl.³ C08K 5/07, 5/05
U.S. Cl. 524—378 3 Claims

1. A one-pack curable composition comprising a mixture consisting essentially of (A) 100 parts by weight of a silyl group containing resin having a backbone substantially comprising a vinyl polymer chain and containing at least one silicon atom attached to a hydrolyzable group at a terminal or in a side chain of its molecule; (B) 0.1 to 10 parts by weight of a curing catalyst; and (C) a solvent;

wherein said curing catalyst is selected from the group consisting of a carboxylic acid type organic tin compound, a mercaptide type organic tin compound having a Sn-S bond, and a sulfide type organic tin compound having a Sn=S bond;

wherein said solvent comprises hydrolyzable ester and/or alkyl alcohol; and

wherein said silyl group containing resin has a molecular weight of between 1,000 and 30,000 and contains an ethylenically unsaturated organic monomer containing active hydrogen as a copolymerization component.

4,435,537
STORAGE STABLE DISPERSIONS OF AROMATIC POLYESTERS IN POLYHYDROXYL COMPOUNDS AND THEIR PREPARATION

Peter Horn, Heidelberg; Anton Hesse; Walter Heckmann, both of Weinheim; Ulrich Lebert, Hettenleidelheim; Alfred Guthmann, Worms, and Matthias Marx, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,763
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112123
Int. Cl.³ C08G 18/14
U.S. Cl. 524—391 11 Claims

1. A storage stable dispersion comprising

(a) a disperse phase comprising from 5 to 35 percent by weight relative to the overall dispersion of a crystallizable polyester of (i) an acid selected from the group consisting of isophthalic acid, terephthalic acid, a mixture of terephthalic acid and an aliphatic dicarboxylic acid, a mixture of terephthalic acid and an aromatic dicarboxylic acids, and a mixture of terephthalic acid, an aliphatic dicarboxylic acid, and an aromatic dicarboxylic acid, and (ii) an alcohol having 1 to 6 carbon atoms wherein said polyester has a melting viscosity at 150° C. of 15 mPas to 3000 mPas; and

(b) a continuous phase consisting of from 65 to 95 percent by weight relative to the overall dispersion of a polyhydroxyl compound having a melting point below 30° C. such that the disperse phase is soluble at temperatures above 35° C. and such that more than 50 percent of the dispersed phase has particle sizes of 10.5 to 100 microns.

4,435,538
COMPOSITION FOR THE PREPARATION OF CARBONACEOUS BASE USE IN THE MANUFACTURE OF SILICONIZED ANTIFRICTION MATERIALS

Valery I. Kostikov, ulitsa Marii Ulyanovoi, 9, korpus 2, kv. 12, Moscow; Jury I. Koshelev, Oktyabrsky prospekt, 365, kv. 8; Vasily D. Telegin, Oktyabrsky prospekt, 306, kv. 71, both of Ljubertsy Moskovskoi oblasti; Alexandr S. Tarabanov, ulitsa Sayanskaya, 6, kv. 123, Moscow; Elena M. Tatievskaya, Strastnoi bulvar, 13a, kv. 32, Moscow, and Lyana I. Kosova, Zeleny prospekt, 11a, kv. 18, Moscow, all of U.S.S.R.

PCT No. PCT/SU80/00102, § 371 Date Jan. 26, 1982, § 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03486, PCT Pub. Date Dec. 10, 1981
PCT Filed Jun. 9, 1980, Ser. No. 346,035
Int. Cl.³ C08K 3/34
U.S. Cl. 524—492 4 Claims

1. A composition for the preparation of a carbonaceous base for use in the manufacture of siliconized antifriction materials comprising a carbonaceous filler and phenolformaldehyde resin, characterized in that it also incorporates a sital of the following composition (percent by weight): Al_2O_3—10–12, CaO—12–14, MgO—9–11, Na_2O—5–6, SiO_2—the balance, the components being present in the following proportions, percent by weight:

carbonaceous filler	65 to 85
phenolformaldehyde resin	12 to 30
sital	3 to 5.

4,435,539

STABILIZED POLYMER COMPOSITIONS

David Witiak, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 218,909, Dec. 22, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,240

Int. Cl.³ C08L *33/00*

U.S. Cl. 524—558 **17 Claims**

1. A polymer composition comprising a copolymer of

(a) an alpha, beta-monoethylenically unsaturated monocarboxylic acid, and

(b) a hydroxy alkyl (C_2-C_6) ester of an alpha, beta-monoethylenically unsaturated monocarboxylic acid,

said copolymer characterized by a monomer ratio (a:b) ranging from 95:5 to 50:50; a weight average molecular weight of about 100,000–500,000, partial neutralization to an extent of at least 25%, and wherein aqueous solutions containing 5–20 weight % of the neutralized copolymer exhibit resistance to gelation while producing a Brookfield viscosity of not greater than 20,000 cps measured at 20° C.±2° C. using spindle No. 3 at 3 rpm.

4,435,540

NOVEL POLYMER COMPOSITION

Kazuo Kishida, Otake; Isao Sasaki, Hiroshima, and Nobuhiro Mukai, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

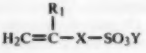
Filed Dec. 31, 1981, Ser. No. 336,460

Claims priority, application Japan, Jan. 6, 1981, 56/937; Mar. 12, 1981, 56/35549

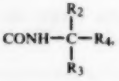
Int. Cl.³ C08K *3/04, 3/08, 3/26, 3/00*

U.S. Cl. 524—780 **6 Claims**

1. A method of preparing a polymeric composition in which an inorganic substance is firmly consolidiated in an organic polymer, comprising: heterogeneously polymerizing methylmethacrylate or a vinyl monomer mixture comprising methylmethacrylate as the major component without initiating the reaction with a radical polymerization initiator at a temperature such that substantially no thermal polymerization occurs in a polymerization system containing said inorganic substance dispersed in an aqueous medium in the presence of at least one monomer selected from the group consisting of sulfonic acid monomers and sulfonate monomers of formula [I]



wherein R_1 is hydrogen, alkyl of 1 to 20 carbon atoms, phenyl, a derivative of a phenyl group, or a halogen atom; X is CONH,



$COO(CH_2)_m$ or $(CH_2)_n$

wherein R_2 and R_3 are each hydrogen or alkyl of 1 to 15 carbon atoms, R_4 is an alkylene group of 1 to 15 carbon atoms, m is an integer of 1 to 20, and n is 0 or an integer of 1 to 20; and U is a hydrogen atom, ammonium radical or an alkali metal atom.

4,435,541

ANTISTATIC THERMOPLASTIC MOLDING MASSES CONTAINING STYRENE-ACRYLONITRILE GRAFTED POLYETHER

Franz Brandstetter, Neustadt; Juergen Hambrecht, Heidelberg; Bernhard Scharf, Schriesheim; Gerhard Lindenschmidt, Leimen; Josef Schwaab, Maikammer, and Rudolf H. Jung, Worms, all of Fed. Rep. of Germany, assignors to Dr. Beck & Co. AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,862

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112428

Int. Cl.³ C08L *25/12, 55/02, 71/02*

U.S. Cl. 525—64 **7 Claims**

1. An antistatic thermoplastic molding material comprising a copolymer of styrene and/or α-methylstyrene and acrylonitrile and, as an antistatic agent, from 0.01 percent by weight to 1.5 percent by weight of a graft polyol prepared by polymerization of a styrene-acrylonitrile mixture in a polyhydroxy polyalkylene polyether said polyether having a molecular weight of 500 to 10,000 and being obtained by the addition reaction of an alkylene oxide having 2 to 3 carbon atoms with a di- or trifunctional initiator molecule.

4,435,542

POLYOL RESIN

Shoji Watanabe, and Takuya Miho, both of Ohtake, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Mar. 2, 1982, Ser. No. 354,003

Claims priority, application Japan, Mar. 23, 1981, 56-42035

Int. Cl.³ C08F *8/28*

U.S. Cl. 525—118 **13 Claims**

1. A polyol resin obtained by reacting 95–40% by weight of an aromatic vinyl monomer-allyl alcohol copolymer with 5–60% by weight of ε-caprolactone, or ε-hydroxycaproic acid.

4,435,543

PHENOLIC RESIN COMPOSITIONS

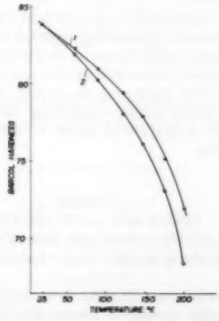
Kenji Ema; Junji Hara; Shuhei Ikado; Hideo Kawashima, and Tomohide Yokoo, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 130,277, Mar. 14, 1980, Pat. No. 4,378,450. This application Apr. 12, 1982, Ser. No. 367,514

Claims priority, application Japan, Mar. 15, 1979, 54-29349; Mar. 3, 1980, 55-25270

Int. Cl.³ C08L *37/00, 61/04*

U.S. Cl. 525—143 **6 Claims**



1. Phenolic resin compositions for molding comprising 100 parts by weight of a polymeric substance having a phenolic OH group selected from the group consisting a phenolic resin and a phenolic polymer and 1 to 100 parts by weight of a rubber containing an epoxy group in its molecule and having an epoxy equivalent of 500 to 30,000 said rubber containing an

epoxy group being an acrylic polymer and having a glass transition temperature of 25° C. or lower.

4,435,544

MIXTURES OF POLYCARBONATE ELASTOMERS, CONTAINING HYDROGENATED DIMERIC FATTY ACID ESTERS AS CONDENSED UNITS, AND POLYOLEFINES AND, OPTIONALLY, OTHER POLYCARBONATES

Manfred Schreckenberg; Werner Nouvertne; Harald Medem; Rolf Dhein, and Peter R. Müller, all of Krefeld-Uerdingen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,329

Claims priority, application European Pat. Off., Oct. 21, 1981, 81108608.1

Int. Cl.³ C08L *69/00, 23/04, 23/06*

U.S. Cl. 525—146 **11 Claims**

1. A mixture comprising

(a) a high-molecular weight, segmented, thermoplastically processable, aromatic polycarbonate containing 5 to 70% by weight of hydrogenated dimeric fatty acid esters as condensed units, alone or with,

(b) another high-molecular weight, aromatic, thermoplastic polycarbonate,

and further comprising

(c) a thermoplastic polyolefine,

the sum of the components (a)+(b) being between 98% by weight and 90% by weight and the amount by weight of component (c) being between 2% and 10%, relative to the total amount by weight of (a)+(b)+(c) (which amounts to 100% by weight), in each case, and the amount by weight of hydrogenated dimeric fatty acid ester as condensed units, being from 3 to 30% by weight, relative to the amount by weight of (a)+(b).

4,435,545

METHOD OF PREPARING COSMETOLOGICAL POLYMERS

Claude Favie, and Michel Mercadier, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), France

Continuation of Ser. No. 93,511, Nov. 13, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,532

Claims priority, application France, Nov. 21, 1978, 78 32742; Nov. 21, 1978, 78 34743

Int. Cl.³ C08F *8/34, 8/12, 8/18, 8/00*

U.S. Cl. 525—344 **18 Claims**

1. A process of preparing an organic polymer having a chain carrying at least one active group attached to a chain carbon atom by chemical bonds comprising reacting a polymer having at least two epoxy bridges selected from the group consisting of polyolefin and a polymer or copolymer of an acrylate or methacrylate with an active group containing cosmetological compound selected from the group consisting of cinnamic acid, methoxycinnamic acid and salicylic acid such that 16–90% of the epoxy bridges are opened and one of each pair of the resulting epoxy carbon atoms has the active group cosmetological moiety bonded thereto and the other of the resulting carbon atoms carries a hydroxyl group, and thereafter opening the remaining epoxy bridges such that one of each pair of the newly opened epoxy carbon atoms carries a hydroxyl group and the other carries a halogen, hydroxy, amine or mercaptan group.

4,435,546

POLYESTERS COMPOSITIONS WHICH CRYSTALLIZE RAPIDLY

Peter Bier, New Martinsville, W. Va., and Rudolf Binsack, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 960,976, Nov. 15, 1978, abandoned, and Ser. No. 875,015, Feb. 3, 1978, abandoned, Ser. No. 960,976, , which is a continuation of Ser. No. 852,894, Nov. 18, 1977, abandoned. This application May 18, 1979, Ser. No. 40,385

Claims priority, application Netherlands, Nov. 2, 1977, 1712080; Italy, Nov. 21, 1977, 51875-77; Japan, Nov. 21, 1977, 53-139036; United Kingdom, Nov. 22, 1977, 4860577; France, Nov. 23, 1977, 77 35259; Netherlands, Nov. 23, 1977, 7712914; Switzerland, Nov. 23, 1977, 14348-77

Int. Cl.³ C08F *283/00;* **C08G** *63/76;* **C08L** *67/00*

U.S. Cl. 525—418 **23 Claims**

1. A thermoplastic composition which crystallizes rapidly, comprising

a. a high molecular weight polyalkylene terephthalate which has an intrinsic viscosity of at least about 0.4 dl/g (measured as a 0.5% strength by weight solution in a phenol/-tetrachloroethane mixture in a weight ratio of 1:1 at 25° C.) and

b. about 0.5 to 30% by weight based on the weight of a. and b. of an esterification product of aliphatic carboxylic acids with 1 to 25 carbon atoms and alcohols selected from aliphatic, cycloaliphatic and araliphatic alcohols with 1 to 20 carbon atoms, said esterification product being monomeric and free of groups substantially reactive with said high molecular weight polyalkylene terephthalate under injection molding conditions and having a carbon atom to ester bond ratio of between 4 and 14 inclusive of the carbonyl carbon atom.

4,435,547

STABILIZED POLYPYRROLIDONE END CAPPED WITH ALKANOLAMINE AND PROCESS FOR PREPARING

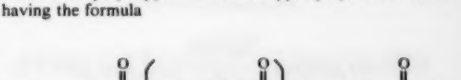
Gar L. Woo, Tiburon, and Phillip H. Parker, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 220,483, Dec. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 220,575, Dec. 29, 1980, Pat. No. 4,383,065. This application Feb. 9, 1983, Ser. No. 465,226

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—420 **25 Claims**

1. A poly-2-pyrrolidone polymer composition, capable of being formed into filaments or other shaped articles, having a weight average molecular weight in the range of about from 35,000 to 100,000 and in which at least about 50% of the molecules of said poly-2-pyrrolidone are capped polymer molecules having the formula



wherein R is a radical having 2 through 12 carbon atoms and having the formula $-R^1R^2Z$, wherein Z is hydroxy, R^1 and R^2 are independently selected from the group of lower alkylene or substituted lower alkylene having 1 through 3 substituents independently selected from the group of amino or hydroxy and wherein the total of the sum of the substituents in R^1 plus R^2 is from 0 through 3 and wherein each carbon atom in said radical has a maximum of one hydroxy or one amino substituent including the Z hydroxy substituent; Y is hydrogen or formyl; and m is a whole integer of at least about 200; and wherein said weight average molecular weight is determined by solution viscosity using a solution containing 0.50 to 1.0

grams of the dried extracted polymer in 10 ml of 88% aqueous formic acid, and applying a Gardner viscosity molecular weight type relationship developed from specific viscosities of 0.1 g of known weight average molecular weight poly-2-pyrrolidone polymers in 100 ml of m-cresol at 25° C.

4,435,548

BRANCHED POLYAMIDOAMINES

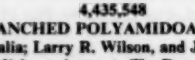
Donald A. Tomalia; Larry R. Wilson, and Jerry R. Conklin, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 27, 1981, Ser. No. 258,158

Int. Cl.³ C08G *69/26*

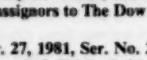
U.S. Cl. 525—451 **7 Claims**

1. A branched polyamidoamine having a weight average molecular weight of at least about 550 and consisting essentially of units corresponding to the formula I

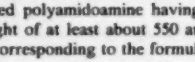


I

wherein R at each occurrence is independently —H or **13** CH_3; A is

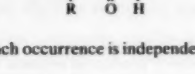


m is an integer from 2 to about 10 and n is an integer from 1 to about 6; D at each occurrence is independently —H or corresponds to formula II



II

with the proviso that at least about 10 percent of the groups represented by D correspond to formula II; B is $CH_{2x}NR'_y$ or



x is an integer from 2 to about 10 and y is an integer from 1 to about 6; R′ at each occurrence is independently —H, a C_1 to C_4 alkyl, or a C_1 to C_4 hydroxyalkyl.

4,435,549

N-CYANO AMIDE COMPOSITIONS AND ADDUCTS THEREOF

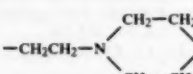
Shiow-Ching Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,187

Int. Cl.³ C08G *59/44*

U.S. Cl. 525—504 **7 Claims**

1. N-cyano amide compositions and adducts thereof of the formula:



wherein R is an aromatic moiety or a polymeric adduct with the valence of n and n is 2 or 3.

4,435,550

METHOD FOR POLYMERIZING α-OLEFIN

Haruo Ueno, Chiba; Takefumi Yano, Ichihara; Tokuji Inoue, Ichihara; Shigeru Ikai, Ichihara; Yoshiyuki Kai, Ichihara, and Michimasa Shimizu, Ichihara, all of Japan, assignors to UBE Industries, Ltd., Chiba, Japan

Filed Mar. 9, 1982, Ser. No. 356,475

Claims priority, application Japan, Mar. 19, 1981, 56-38643

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.³ C08F *4/02, 10/04*

U.S. Cl. 526—73 **29 Claims**

1. A method for polymerizing an α-olefin which comprises: (1) a preliminary polymerization step wherein a feed containing at least one α-olefin having 3 or more carbon atoms is brought, at a temperature of 40° C. or less, into contact with a catalyst comprising (A) a first solid catalytic ingredient which has been prepared in such a manner that (a) a Grignard compound of the formula (I):

$$R^3M_gX \qquad (I)$$

wherein R^3 represents an alkyl radical having 1 to 8 carbon atoms and X represents a halogen atom, is reacted with a reaction product of an aluminium halide with an organic silicon compound of the formula (II):

$$R_n^1Si(OR^2)_{4-n} \qquad (II)$$

wherein R^1 represents a member selected from the group consisting of alkyl radicals having 1 to 8 carbon atoms and a phenyl radical, R^2 represents an alkyl radical having 1 to 8 carbon atoms and n represents an integer of 0, 1, 2 or 3, (b) the resultant solid carrier is brought into a first contact with a titanium tetrahalide, (c) the resultant titanium-containing solid product is treated with an organic acid ester and, finally, (d) the treated solid product is brought into a second contact with a titanium tetrahalide; (B) a second catalytic ingredient consisting of at least one trialkyl aluminium of the formula (III):

$$AlR_3^4 \qquad (III)$$

wherein R^4 represents alkyl radical having 2 to 6 carbon atoms; and (C) a third catalytic ingredient consisting of at least one organic acid ester, whereby at least a portion of said α-olefin is preliminarily polymerized; and, thereafter, (2) a final polymerization step wherein a polymerization mixture consisting of said catalyst, the resultant preliminary α-olefin polymer and α-olefin to be polymerized is heated at a temperature above 40° C., whereby the entire amount of α-olefin in said feed is polymerized.

4,435,551

PROCESS FOR THE POLYMERIZATION OR COPOLYMERIZATION OF ETHYLENE WITH AN IMPROVED SUPPORTED CHROMIUM OXIDE TYPE CATALYST

Lambertus J. M. A. van de Leemput, Echt; Godefridus A. H. Nooijen, Helden-Panningen, and Hendrikus W. van der Loo, Munstergeleen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Division of Ser. No. 261,738, May 7, 1981, Pat. No. 4,382,020. This application Sep. 14, 1982, Ser. No. 418,020

Claims priority, application Netherlands, May 7, 1980, 8002599

Int. Cl.³ C08F *4/78*

U.S. Cl. 526—101 **3 Claims**

1. An improved process for the polymerization of ethylene, or the copolymerization of ethylene with at most 15 mole percent of one or more alkenes having 3 to 15 carbon atoms, in the prsence of a supported chromium oxide type of catalyst, said improvement comprising carrying out said polymerization in the presence of a catalyst prepared by the steps of:

reacting in the presence of a solvent which is inert with respect to compounds (1), (2), and (3) hereinafter referenced,

(1) a chromium chelate of a 1,3-diketo compound, and

(2) a vanadium chelate or a vanadyl chelate of a 1,3-diketo compound,

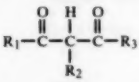
separately or jointly with

(3) an organo-metallic compound of an element from Group II or III of the periodic system in which hydrocarbyl groups with 1–20 carbon atoms are bound, via a carbon atom, to the element;

jointly contacting the resulting solution containing the reaction products of (1) and (2) with (3) with, and depositing such reaction products on, an inert inorganic supporting material; and

heating said supporting material having such reaction products deposited thereon in a non-reducing atmosphere at a temperature between about 200° and 1200° C.;

wherein said 1,3-diketo compounds of (1) and (2) are the same or different and have the formula



in which formula R_1, R_2, and R_3 are the same or different, R_1 and R_3 being an alkyl group with 1–10 carbon atoms, and R_2 being selected from the group consisting of an alkyl group with 1–10 carbon atoms, and a hydrogen atom.

4,435,552

PROCESS FOR THE PREPARATION OF COPOLYMERS OF ETHYLENE WITH AT LEAST ONE OTHER 1-ALKENE

Georges G. Evens, Maasmechelen, Belgium, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jul. 10, 1981, Ser. No. 282,011

Claims priority, application Netherlands, Jul. 11, 1980, 8003997; Jun. 5, 1981, 8102724

Int. Cl.³ C08F *4/68, 210/16, 210/18*

U.S. Cl. 526—140 **15 Claims**

1. A process for copolymerization to form copolymers containing

from 25–85 Wt. % of ethylene units,

from 15–75 Wt. % of units of at least one other 1-alkene,

and up to 20% of units of aliphatic or alicyclic polyunsaturated monomer of from 3 to 20 carbon atoms and having at least two non-conjugated carbon-carbon double bonds

wherein the catalyst system employed contains

(a) a compound of vanadium which is soluble in the polymerization medium,

(b) a compound of metal from Periodic Table Groups I–III in which at least one hydrocarbon group is bound directly to the metal atom through a carbon atom

in the presence of a halogen compound of the general formula:

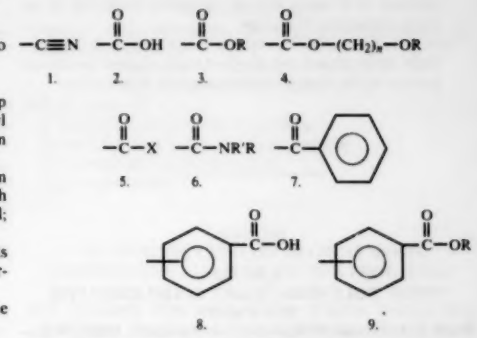
wherein

A represents a phenyl group having at most one substituent halogen atom or up to two alkyl groups, or a thienyl, furyl, pyrollyl, N-alkylpyrollyl, or pyridyl group bonded to the carbon atom directly or through a carbonyl group

X is chlorine or bromine

Y is chlorine, bromine, hydrogen, or a hydrocarbon group of from 1 to 8 carbon atoms, and

Z represents one of the radicals represented by the following formulae:



wherein R and R^1 represent hydrocarbon groups of from 1 to 8 carbon atoms, and wherein A, X, Y, and Z are chosen such that said halogen compound contains a total of at most two halogen atoms.

4,435,553

PROCESS FOR NONAQUEOUS DISPERSION POLYMERIZATION OF BUTADIENE IN THE PRESENCE OF CARBONYLATED POLYMERIC DISPERSING AGENTS

Morford C. Throckmorton, and Joginder Lal, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 20, 1982, Ser. No. 420,066

Int. Cl.³ C08F *2/08*

U.S. Cl. 526—201 **10 Claims**

1. A process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of at least one carbonylated polymer selected from the group consisting of (1) carbonylated copolymers of alpha-olefins and conjugated diolefins, (2) carbonylated terpolymers of alpha-olefins and conjugated diolefins, (3) carbonylated copolymers of alpha-olefins and nonconjugated diolefins, (4) carbonylated terpolymers of alpha-olefins and nonconjugated diolefins, (5) terpolymers of alpha-olefins, conjugated diolefins, and nonconjugated diolefins, (6) carbonylated homopolymers of conjugated diolefins, (7) carbonylated homopolymers of nonconjugated diolefins, (8) carbonylated copolymers of conjugated diolefins and nonconjugated diolefins, and (9) carbonylated terpolymers of conjugated diolefins and nonconjugated diolefins.

4,435,554

EMULSION POLYMERIZATION PROCESS USING MONOBASIC ALKALI PHOSPHATE

Anthony J. Bell, Stow, and Leland E. Beyersdorff, North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 30, 1982, Ser. No. 412,697

Int. Cl.³ C08F *236/12, 4/08*

U.S. Cl. 526—229 **8 Claims**

1. A process for the preparation of acrylonitrile-butadiene rubber wherein an anionic surfactant and potassium persulfate is used, the improvement which comprises the addition of a monobasic alkali phosphate to an emulsion polymerization formulation

said monobasic alkali phosphate being of the general structural formula

MH_2PO_4

wherein M is selected from the group consisting of sodium, potassium or lithium;

said monobasic alkali phosphate being present in amounts from 0.4 to 1 part per hundred parts of total monomers present in the emulsion polymerization formulation.

4,435,555

NOVEL POLYMERIC LIGHT STABILIZERS FOR POLYMERS

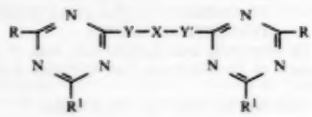
Frank F. Loffelman, Bridgewater, and Thomas E. Brady, Whitehouse Station, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 285,239, Jul. 20, 1981, abandoned. This application Feb. 16, 1983, Ser. No. 467,106

Int. Cl.[3] **C08F** *26/06*

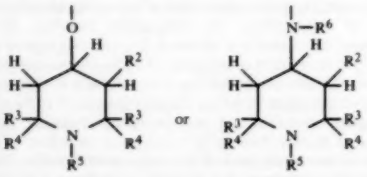
U.S. Cl. 526—261 **6 Claims**

1. A polymer prepared by polymerizing, optionally with a comonomer, a compound of the formula (I)



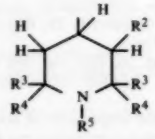
(I)

wherein R represents C_3–C_6 alkenyloxy, C_3–C_6 alkenylamino, or di(C_3–C_6 alkenyl)amino; R^1 represents C_1–C_8 alkyl, C_1–C_8 alkoxy, halo, C_1–C_8 alkylthio, C_3–C_6 alkenyloxy, amino, C_3–C_6 alkenylamino, di(C_3–C_6 alkenyl)amino, the groups

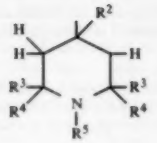


or

C_1–C_{18} alkylamino, di(C_1–C_{18})alkylamino, morpholino, pyrrolidyl, piperidino, a substituted C_1–C_{18} alkylamino, or a substituted di(C_1–C_{18})alkylamino, wherein the substituents are selected from amino, cyano, carboxy, wherein the alkoxy moiety has 1 to 8 carbon atoms, and the group



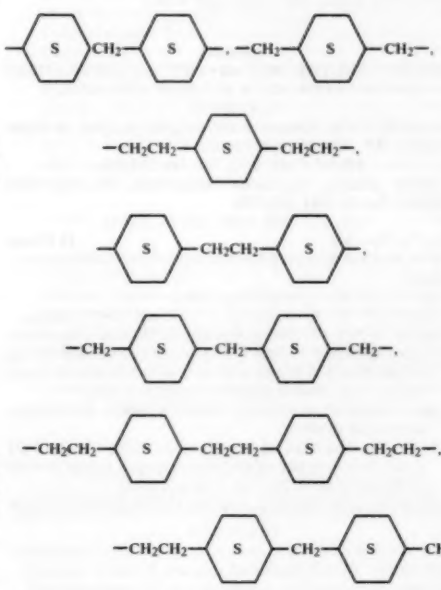
wherein R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; and R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; R^6 represents hydrogen, C_1–C_8 alkyl, or the group



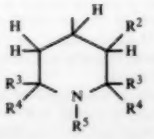
Y and Y', which may be the same, or different, represent oxy, or

X represents C_2–C_{12} alkylene, wherein the alkylene chain may be interrputed by an oxo, thio, or

radical, C_5–C_{10} cycloalkylene,



C_6–C_{12} arylene, or C_8–C_{14} aralkylene; with the proviso that at least one substituent in said compound is, or contains,

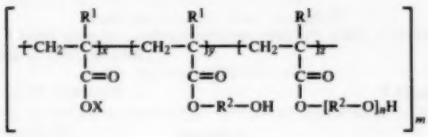


4,435,556
METHOD OF MAKING AND USING NOVEL SCALE INHIBITING TERPOLYMER

William F. Masler, III, 1026 Mattingly Rd., Hinckley, Ohio 44233

Filed Mar. 28, 1983, Ser. No. 480,182
Int. Cl.³ C08F 20/28
U.S. Cl. 526—317 13 Claims

6. A composition for treating process water in a recirculating water system, said composition comprising an effective amount for the purpose, of a water-soluble essentially non-crosslinked random copolymer consisting essentially of a terpolymer of acrylic acid or methacrylic acid and esters of 2-hydroxyalkyl-(meth)acrylate, the terpolymer having the structural formula



wherein,

X represents H, or NH_4, or an alkali metal selected from the group consisting of sodium and potassium;

R^1 represents H, or methyl;

R^2 represents lower alkyl having from 2 to about 4 carbon atoms;

n is an integer in the range from 2 to about 6;

m is an integer in the range from about 3 to about 180; and,

for each y (that is, y=1) x is an integer in the range from about 2 to 5, and z is an integer in the range from 0.02 to about 0.3; and x, y and z are present in relative heterogeneous order.

4,435,557
Patent Not Issued For This Number

4,435,558
HARDENABLE URETHANE-EPOXY RESIN MIXTURES

Christian Burba; Hermann-Josef Lucas, both of Aschebergs-Herbern, and Bernd Neffgen, Cappenberg, all of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,015
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151592
Int. Cl.³ C08G 18/80
U.S. Cl. 528—45 12 Claims

1. The method of hardening a glycidyl compound having more than one epoxy group per molecule, which method comprises admixing with said glycidyl compound an approximately stoichiometric amount of an amino hardener which is a polyether urethane urea amine prepared by the reaction of

(1) a prepolymer having blocked isocyanate groups, prepared by reacting a phenol or alkylphenol with the reaction product of a polyether polyol or polythioether polyol with an excess of a polyisocyanate, with

(2) a polyfunctional amino compound having

(a) at least two reactive amino hydrogen atoms per molecule or

(b) at least one reactive amino hydrogen atom and at least one azomethine group per molecule, the amine then being liberated from the reaction product formed between (1) and 2(b) by hydrolysis of the azomethine group.

4,435,559
β-HYDROXY URETHANE LOW TEMPERATURE CURING AGENTS

Joseph T. Valko, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 18, 1982, Ser. No. 409,273
Int. Cl.³ C08G 18/28, 18/81, 59/40
U.S. Cl. 528—73 11 Claims

1. A curable composition comprising:

(i) an active hydrogen-containing material,

(ii) a beta-hydroxy urethane, and

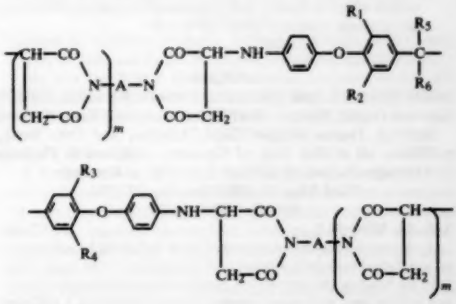
(iii) a cure catalyst.

4,435,560
MALEIMIDE: ARYLOXY DIAMINE RESIN COMPOSITION AND PROCESS FOR PRODUCING SAME

Akio Takahashi, Hitachiohta; Moloyo Wajima, Hitachi; Akio Nishikawa, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,624
Claims priority, application Japan, Sep. 9, 1980, 55-124044
Int. Cl.³ C08G 73/10
U.S. Cl. 528—170 16 Claims

1. A maleimide resin composition comprising a maleimide-diamine adduct having the recurring units:



wherein A represents a mono- , di-, tri-or tetravalent organic group containing at least two carbon atoms, m represents an integer of 0 ro 4, R_1 through R_4 which are the same or different represent hydrogen atom, a lower alkyl group, a lower alkoxy group, chlorine atom or bromine atom, and R_5 and R_6 which are the same or different represent hydrogen atom, methyl group, ethyl group, trifluoromethyl group or trichloromethyl group, said adduct being soluble in an organic solvent having a boiling point of 130° C. or lower to form a solution of a concentration of 50% or more.

4,435,561
TEMPERATURE STABLE THERMOTROPIC POLY(ESTER CARBONATE) CONTAINING HIGH AMOUNTS OF READILY AVAILABLE DIOLS

Yu-Chin Lai; Bruce T. DeBona; Dusan C. Prevorsek, and Murali K. Akkapeddi, all of Morris County, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 30, 1983, Ser. No. 509,471
Int. Cl.³ C08G 63/64
U.S. Cl. 528—193 10 Claims

1. In a thermotropic poly(ester carbonate) having diacyl moieties which are primarily terephthalate moieties, carbonate moieties and dihydroxy-derived moieties, the improvement wherein the dihydroxy-derived moieties comprise a mixture of, by moles:

(a) about 60–20% benzene-1,4-dioxy,

(b) about 20–40% benzene 1,3-dioxy,

(c) about 30–5% methylbenzene-2,5-dioxy, and
(d) about 10–30% t-butylbenzene-2,5-dioxy.

4,435,562
PROCESS FOR THE PRODUCTION OF POLYESTER COPOLYMERS

Carl M. Sullivan, and Mellis M. Kelley, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 6, 1983, Ser. No. 492,109
Int. Cl.³ C08G *63/22*
U.S. Cl. 528—272 **7 Claims**

1. A process to improve randomization of copolyesters comprising;

(a) esterifying a dicarboxylic acid and a diol, said dicarboxylic acid selected from the group comprising alkyl dicarboxylic acids having a total of 2 to 16 carbons atoms or an aryl dicarbocxylic acid having a total of from 8 to 16 carbon atoms; said diol having from 2 to 10 carbon atoms, said diol is in a mole ratio to dicarboxylic acid from 2.5:1 to 1.15:1; thereafter,

(b) transesterifying the esterification product in the presence of a diol and a diester, said diol having from 2 to 10 carbon atoms, said diester being selected from the group of alkyl diesters having a total of from 2 to 20 carbon atoms, and alkyl substituted aryl diesters having a total of from 10 to 20 carbon atoms; thereafter

(c) polymerizing the transesterification product in a condensation stage to form a polycondensed copolyester having an intrinsic viscosity from 0.2 to 0.9.

4,435,563
PROCESS FOR THE RECOVERY OF PURE HELLEBRIN

Gerhard Oepen, Maintal; Karl-Heinz Mangartz, Kahl; Norbert Seifried, Hanau; Jürgen Engel, Alzenau, and Otto Isaac, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 11, 1982, Ser. No. 377,251
Int. Cl.³ C07J *19/00*
U.S. Cl. 536—18.1 **10 Claims**

1. A process for the recovery of pure hellebrin by extraction of a defatted hellebrin extract and deposition of the pure hellebrin by heating the extraction residue in the presence of ethanol comprising multistep countercurrent extracting a defatted hellebrin containing extract in a solvent which is a water -C_1–C_3-alkanol mixture or a water-acetone mixture with a solvent mixture consisting of a C_1–C_3-alkanol or acetone and a chlorohydrocarbon which is dichloromethane, trichloromethane, tetrachloromethane or dichloroethane and subsequently concentrating the hellebrin containing chloromethane or chloroethane phase in a vacuum and heating the thus obtained syrupy residue in ethanol under reflux until the residue is dissolved completely and the first hellebrin crystals begin to deposit.

4,435,564
COMPOSITIONS AND PROCESSES FOR USING HYDROXYETHYL CELLULOSE IN HEAVY BRINES

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Jun. 7, 1982, Ser. No. 385,572
Int. Cl.³ C08B *11/20*; C09K *3/00, 7/00*
U.S. Cl. 536—87 **19 Claims**

1. A process for activating hydroxyethyl cellulose (HEC) such that said HEC will be at least 80% hydrated within about one hour at 22° C. when added to a compatible brine having a density greater than about 13.5 lb./gal. containing one or more salts selected from the group consisting of calcium chloride, calcium bromide, zinc chloride, and zinc bromide, which comprises admixing with said HEC a solution of an amino compound in a water soluble organic liquid in an amount sufficient to provide at least 40% of said amino compound, based on the weight of HEC, and from about 15% to about 30% by weight of HEC in the mixture, said amino compound containing at least two polar groups per molecule selected from the group consisting of primary amino, secondary amino, tertiary amino, hydroxyl and mixtures thereof, having an atomic ratio of carbon atoms to the total number of primary amino plus hydroxyl groups not exceeding five.

19. A process of increasing the viscosity of a heavy brine having a density greater than about 13.5 pounds per gallon containing one or more salts selected from the group consisting of calcium chloride, calcium bromide, zinc chloride, and zinc bromide, which comprises adding to said brine a viscosifying amount of an activated hydroxyethyl cellulose composition obtained from the process of claim **1**, **2**, **3**, **6**, **7**, **10**, **11**, **12**, **14**, **15** or **16**.

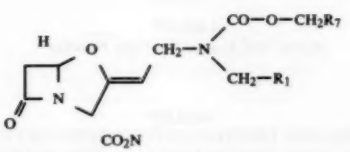
4,435,565
9-DEOXY-9-AMINO-CLAVULANATE ANTIBACTERIAL AGENTS

Irene Stirling, Reigate, and Brian P. Clarke, Kingswood, both of England, assignors to Beecham Group Limited, England

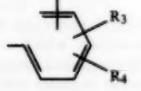
Division of Ser. No. 95,799, Nov. 19, 1979, which is a continuation of Ser. No. 896,441, Apr. 14, 1978, abandoned. This application Mar. 16, 1981, Ser. No. 244,098
Claims priority, application United Kingdom, Apr. 22, 1977, 16764/77; Sep. 6, 1977, 37072/77; Dec. 2, 1977, 50229/77; Dec. 23, 1977, 53866/77
Int. Cl.³ C07D *487/04*; A61K *31/42*
U.S. Cl. 542—416 **8 Claims**

1. A compound of the formula (XI):

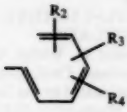
(XI)



a salt or a pharmaceutically acceptable ester thereof wherein R_1 is hydrogen, alkyl of up to 5 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, hydroxyalkyl of up to 6 carbon atoms or a moiety of the sub-formula (a):



wherein R_2 is hydrogen, fluorine, chlorine, bromine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms, acyloxyl of 1–3 carbon atoms and no additional heteroatoms, hydroxyl, alkoxycarbonyl containing 1–3 carbon atoms in the alkoxy moiety or $-N(R_5)CO.R_6-N(R_5)SO_2R_6$ or $-CO-NR_5R_6$ wherein R_5 is hydrogen, alkyl of 1–3 carbon atoms, phenyl or benzyl and R_6 is alkyl of 1–3 carbon atoms, phenyl or benzyl; R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or acyloxyl of 1–3 carbon atoms and no additional heteroatoms; and R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxyl of 1–3 carbon atoms and R_7 is a moiety of the sub-formula (a):



wherein R_2, R_3 and R_4 are as above defined.

4,435,566

THIOPYRANOPYRIMIDINE COMPOUNDS AND ACID ADDITION SALTS THEREOF

Sachio Ohno; Kiyoshi Mizukoshi; Osamu Komatsu; Hajimu Yamamoto, and Yasuo Kunou, all of Aichi, Japan, assignors to Maruko Seiyaku Co., Ltd., Nagoya, Japan

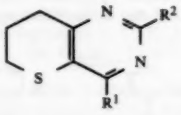
Filed Feb. 25, 1983, Ser. No. 469,657

Claims priority, application Japan, Feb. 25, 1982, 57-29594; Feb. 1, 1983, 58-15097

Int. Cl.³ C07D *495/04*

U.S. Cl. 544—117 **9 Claims**

1. A thiopyranopyrimidine compound represented by the formula (I)



(I)

wherein R^1 represents an amino group, a methylamino group, a hydroxyethylamino group, a pyrrolidino group, a morpholino group, a piperazino group or an N-substituted piperazino group, and R^2 represents an amino group, a methylamino group, a dimethylamino group, a piperazino group, an N-substituted piperazino group, a pyrrolidino group, a piperidino group or a morpholino group, and the pharmaceutically acceptable acid addition salt thereof.

4,435,567

PROCESS FOR PREPARING SUBSTITUTED UREA DERIVATIVES

György Lugosi, Göd-felso; Antal Simay, Budapest; Janos Bodnar, Budapest; Laszlo Simandi, Budapest, and Eva Somfai, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T., Budapest, Hungary

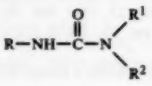
Filed Dec. 28, 1981, Ser. No. 334,470

Claims priority, application Hungary, Dec. 29, 1980, 3135/80

Int. Cl.³ C07C *127/00, 127/15, 127/17, 127/19*

U.S. Cl. 544—165 **1 Claim**

1. A process for the preparation of a urea derivative of formula (I)



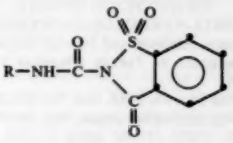
wherein

R is hydrogen, alkyl, aryl, cycloalkyl or aralkyl,

R^1 and R^2 are hydrogen, alkyl, alkenyl, alkinyl, alkoxy, oxyalkyl, cycloalkyl, aralkyl, alkoxycarbonylalkyl, aryl or heteroaryl, or R^1 and R^2 together with the adjacent nitrogen atom may form a saturated or unsaturated heterocycle, or a condensed and/or substituted ring system, and said heterocycle or said condensed and/or substituted ring system may contain also a sulfo group,

which comprises reacting an amine of formula (II)

with an N-carbamoyl-benzoic acid sulfimide in a composition consisting essentially of 3 to 60% by weight of a sulfimide of formula (III)



wherein R is hydrogen, alkyl, aryl, cycloalkyl or aralkyl, as an N-acylating agent and of from 97 to 40% by weight, preferably of from 95 to 50% by weight solvent as an additive, and 0.01 to 30% by weight organic or inorganic base.

4,435,568

THIOL METHYLATION PROCESS-REACTION, RECYCLE AND REGENERATION OF METHYL BROMIDE

Kenneth L. Barbour, Newark; William L. Geigle, New Castle, both of Del., and Frank R. Haglid, deceased, late of Wilmington, Del. (by Britt I. Haglid, executrix), assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 22, 1982, Ser. No. 400,756

Int. Cl.³ C07D *253/06*

U.S. Cl. 544—182 **8 Claims**

1. In the process of contacting and reacting butylthion with methyl bromide in aqueous alkaline solution to form a reaction mixture from which metribuzin precipitates and is recovered leaving a reaction supernatant containing methyl bromide, butylthion, and alkali metal bromide, the improvement comprising carrying out the reaction with a temperature profile in which methyl bromide addition and initial reaction occur at one temperature, followed by increasing the temperature and maintaining it for additional reaction.

4,435,569

5-[SUBSTITUTED AMINO METHYL]PYRROLO[2,3-D]PYRIMIDINE-4-ONE

Susumu Nishimura, Ichihara, and Hiroaki Nomura, Takstsuki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

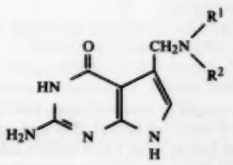
Filed Sep. 24, 1982, Ser. No. 423,243

Claims priority, application Japan, Nov. 18, 1981, 56-184653

Int. Cl.³ C07D *487/04*; A61K *31/505*

U.S. Cl. 544—280 **10 Claims**

1. A compound of the formula:



wherein

R^1 is C_{1-18} alkyl which may be substituted with di-C_{1-3} alkylamino; C_{1-18} alkenyl; C_{3-8} cycloalkyl; C_{5-8} cycloalkenyl; C_{7-13} aralkyl which may be substituted with C_{1-4}

alkoxy, C_{1-4} alkanoyl, C_{2-4} alkoxycarbonyl, hydroxy, amino, nitro, trifluoromethyl or C_{1-4} alkanoylamino; or C_{6-10} aryl and R^2 is hydrogen or C_{7-13} aralkyl or,

R^1 and R^2, taken together with adjacent nitrogen atom, form a piperidine ring,

or a pharmaceutically acceptable salt thereof.

4,435,570

5-(PHENYL OR BENZYL AMINO)METHYL-PYRROLO[2,3-d]PYRIMIDIN-4-ONE

Susumu Nishimura, Ichihara, and Hiroshi Akimoto, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

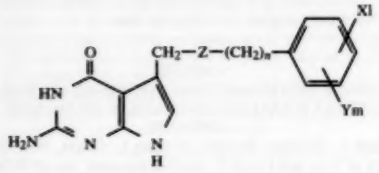
Filed Sep. 24, 1982, Ser. No. 423,249

Claims priority, application Japan, Sep. 26, 1981, 56-152646

Int. Cl.³ C07D *487/04;* A61K *31/505, 43/00*

U.S. Cl. 544—280 **9 Claims**

1. A compound of the formula:



wherein X is halogen, Y is hydroxyl or di-C_{1-3} alkylamino, Z is a —NH— or —NHC(=NH)— group, l is an integer of 1 to 5, m is an integer of 0 to 2, and n is 1 when Z is a —NH— group or n is 0 or 1 when Z is a —NHC(=NH)— group, or a pharmaceutically acceptable salt thereof.

4,435,571

5-(SUBSTITUTED BENZYL)-6-OXO-2-PIPERAZINE CARBOXYLIC ACIDS AND ESTERS

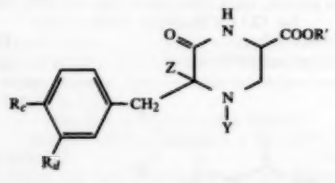
Albert A. Carr; Robert A. Farr, and John M. Kane, all of Cincinnati, Ohio, assignors to Richardson Merrell Inc., Cincinnati, Ohio

Division of Ser. No. 130,431, Mar. 14, 1980, Pat. No. 4,341,698, which is a continuation-in-part of Ser. No. 50,950, Jun. 21, 1979, abandoned. This application Jul. 19, 1982, Ser. No. 399,553

Int. Cl.³ C07D *241/08;* A61K *31/495*

U.S. Cl. 544—384 **4 Claims**

1. A compound of the formula



wherein R′ is hydrogen, straight or branched chain lower alkyl having from 1 to 4 carbon atoms or benzyl, Z is hydrogen or straight chain lower alkyl having from 1 to 4 carbon atoms, Y is hydrogen or a nitrogen blocking group selected from the group consisting of tertiary C4–C5 alkoxycarbonyl, benzyloxycarbonyl, and vinyloxycarbonyl, R_c is hydrogen, halogen or benzyloxy and R_d is hydrogen, or R_c and R_d are benzyloxy; or an individual diastereromer thereof.

4,435,572

SYNTHESIS OF ETHYL-4(3′-METHOXYPHENYL)-1-METHYL PIPERIDINE-3-CARBOXYLATE

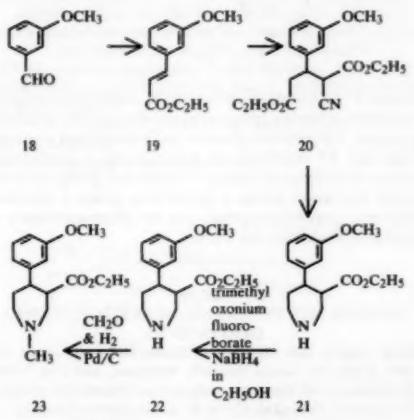
Henry Rapoport, Berkeley, Calif.; Dwight D. Weller, Champaigne, Ill., and Richard D. Cless, Oakland, Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 31,749, Apr. 20, 1979, abandoned, which is a division of Ser. No. 900,275, Apr. 26, 1978, Pat. No. 4,189,583. This application Mar. 16, 1981, Ser. No. 243,775

Int. Cl.³ C07D *211/76, 295/14*

U.S. Cl. 546—228 **3 Claims**

1. In a process for the production of 4a-aryldecahydroisoquinolines, the steps consisting of commencing with 3-methoxybenzaldehyde and producing and isolating as intermediates ethyl 3-methoxycinnamate (19), diethyl 2-cyano-3-(3′-methoxyphenyl)pentanedioate (20), and ethyl 4-(3′-methoxyphenyl)-2-piperidone-5-carboxylate (21) and reducing the amide function of ethyl 4-(3′-methoxyphenyl)-2-piperidone-5-carboxylate (21) and isolating same while retaining the ester function by trimethyl oxonium fluoroborate followed by $NaBH_4$ in ethanol to yield the amino ester ethyl 4-(3′-methoxyphenyl)piperidine-3-carboxylate (22) and subsequently methylating said ester by a reductive methylation to produce ethyl 4-(3′-methoxyphenyl)-1-methylpiperidine-3-carboxylate (23) and isolating same according to the following schemat:



4,435,573

PROCESS FOR THE PREPARATION OF SUBSTITUTED PYRIDINES

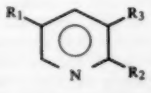
Zenon Lysenko, and Richard G. Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 25, 1982, Ser. No. 436,231

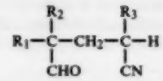
Int. Cl.³ C07D *213/09*

U.S. Cl. 546—250 **8 Claims**

1. A process for preparing a compound having the formula



wherein R_1 is C_1–C_4 alkyl, phenyl, hydrogen or halogen, R_2 is Cl or Br and R_3 is Cl, Br or F which comprises cyclizing a compound having the formula



wherein R_1, R_2 and R_3 are as above-defined, in the presence of a catalytic amount of at least one organic amine base and/or an organometallic transition metal catalyst.

4,435,574

2,6-DIMETHYL-3,5-DICARBOMETHOXY-4-(ORTHO-DIFLUOROMETHYLTHIOPHENYL)-1,4-DIHYDROPYRIDINE

Valeria V. Kastron, ulitsa Avo tu, 33, kv. 2; Rasma O. Vitolin, ulitsa Suvorova, 117, kv. 13; Gunar Y. Dubur, ulitsa Ierikju, 43, kv. 2, all of Riga; Marita Y. Selga, ulitsa Kursas, 1, Rizhsky raion, selo Garkalne; Guntis V. Zarinsh, ulitsa Lachu, 5, kv. 1, Riga; Natalya V. Kondratenko, Rusanovskaya naberezhnaya, 6, kv. 171, Kiev; Vladimir I. Popov, ulitsa Bratislavskaya, 2, kv. 86, Kiev; Alexandr A. Kolomeitsev, prospekt 40 let Oktyabrya, 21, kv. 204, Kiev, and Lev M. Yagupolsky, ulitsa Ivana Kudri, 41, kv. 48, Kiev, all of U.S.S.R.

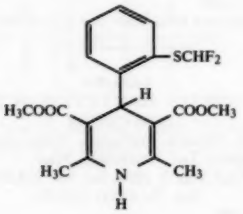
Filed Jul. 16, 1982, Ser. No. 398,910

Claims priority, application U.S.S.R., Jul. 20, 1981, 3353822

Int. Cl.³ C07D *213/55*

U.S. Cl. 546—321 **1 Claim**

1. 2,6-dimethyl-3,5-dicarbomethoxy-4-(o-difluoromethylthiophenyl)-1,4-dihydropyridine having the formula



4,435,575

PROCESS FOR PREPARING CARBOXYLATED ORGANIC COMPOUNDS

Gianfranco Cainelli, Bologna; Marco Foa', Novara; Achille U. Ronchi, Ancona, and Andrea Gardano, Trino Vercellese - Vercelli, all of Italy, assignors to Montedison S.p.A., Milan, Italy

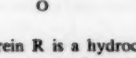
Filed Jun. 30, 1981, Ser. No. 279,090

Claims priority, application Italy, Jul. 1, 1980, 23163 A/80

Int. Cl.³ C07C *51/10*

U.S. Cl. 546—341 **19 Claims**

1. A catalytic process for preparing carboxylated organic compounds, acids and/or esters and/or alkaline salts having the formula (I)



(I)

wherein R is a hydrocarbyl group having up to 11 carbon atoms, selected from the aliphatic alicyclic, aryl- and heteroarylalkyl groups, and said groups substituted by substituents selected from the group consisting of alkyl, aryl, etheric, thioetheric, halogen, nitrile, ester, amide and ketonic groups, and R' is a hydrogen atom or an alkyl group having up to 8 carbon atoms, by reacting with carbon monoxide the corresponding halides of formula (II)

(II)

wherein R has the same meaning as in formula (I) and X is a halogen bound to a primary or secondary carbon atom, and selected from the group consisting of Cl, Br and I, in the presence of a salt of cobalt hydrocarbonyl in an alcoholic or aqueous alcoholic solvent and of bases, characterized in that the catalyst is a salt of cobalt hydrocarbonyl having the formula:

in which Me is a cation of a metal having a valence n, selected from the group consisting of Na, K, Li, Co, Fe, and Mn, said catalyst being supported on an anion exchange resin.

4,435,576

PROCESS FOR THE PRODUCTION OF 2-AMINO-4-METHYL-BENZOTHIAZOLE

Armand Squaratti, Brig, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Continuation of Ser. No. 103,540, Dec. 13, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,455

Claims priority, application Switzerland, Dec. 20, 1978, 12931/78

Int. Cl.³ C07D *277/82*

U.S. Cl. 548—164 **20 Claims**

1. Process for the production of 2-amino-methylbenzothiazole comprising the steps of:

(a) reacting o-tolylthiourea with chlorine, a ring closure reactant, in the presence of methylene chloride and in the absence of a catalyst, there being no chlorination of the benzene ring in the o-tolylthiourea, 2-amino-4-methylbenzothiazole hydrochloride resulting, one weight unit of o-tolylthiourea being used per 3 to 40 volume units of methylene chloride, 1 to 2 moles of chlorine being used per mole of o-tolylthiourea, step (a) being conducted at a temperature between −20° and +15° C., the methylene chloride being a suspending liquid and a solvent for the o-tolylthiourea, being a suspending agent for the 2-amino-4-methyl-benzothiazole hydrochloride and being a solvent for the chlorine; and

(b) reacting the 2-amino-4-methylbenzothiazole hydrochloride with a sufficient amount of a base, 2-amino-4-methylbenzothiazole resulting, said base being selected from the group consisting of an alkali metal hydroxide, an alkaline earth metal hydroxide, hydrazine, hydroxylamine, sodium oxide, ammonium hydroxide and zinc hydroxide.

4,435,577

PROCESS FOR THE PREPARATION OF CHLORINATED DERIVATIVES OF BENZOXAZOLONES

Noël Rouy, Yerres, and Francois Dewilde, Thiais, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Mar. 11, 1981, Ser. No. 242,538

Claims priority, application France, Mar. 27, 1980, 80 07262

Int. Cl.³ C07D *498/04*

U.S. Cl. 548—221 **10 Claims**

1. A process for the preparation of a chlorinated derivative of benzoxazolone, which comprises the step of reacting benzoxazolone with molecular chlorine in the presence of water and dioxane to thereby form 6-chlorobenzoxazolone.

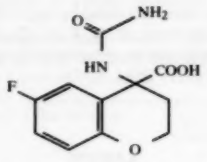
4,435,578

SORBINIL BY OPTICAL RESOLUTION OF PRECURSOR 6-FLUORO-4-UREIDOCHROMAN-4-CARBOXYLIC ACID

Berkeley W. Cue, Jr., Gales Ferry, and Bernard S. Moore, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,641
Int. Cl.[3] C07D *491/107, 311/68*
U.S. Cl. 548—309 8 Claims

1. A process for the preparation of a crystalline S-6-fluoro-4-ureidochroman-4-carboxylic acid salt with D-(+)-(1-phenethyl)amine or L-(−)-ephedrine which comprises combining a racemic compound of the formula



with at least a half molar quantity of D-(+)-(1-phenethyl)amine or L-(−)-ephedrine in a reaction-inert organic solvent and recovering said crystalline salt.

2. A process of claim 1 which further comprises cyclization of said recovered crystalline salt in glacial acetic acid to form sorbinil and recovering said sorbinil or a pharmaceutically-acceptable cationic salt thereof.

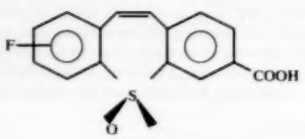
4,435,579

RESOLUTION OF SUBSTITUTED DIBENZO[B,F]THIEPIN-3-CARBOXYLIC ACID-5-OXIDES WITH EPHEDRINE

Patrice C. Belanger; Haydn W. R. Williams, both of Dollard des Ormeaux, and Joshua Rokach, Chomedey-Laval, all of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 351,708, Feb. 24, 1982, Pat. No. 4,424,355, which is a continuation of Ser. No. 229,222, Jan. 28, 1981, abandoned. This application Jul. 12, 1982, Ser. No. 397,253
Int. Cl.[3] C07D *337/14*
U.S. Cl. 549—12 7 Claims

1. An improved process for the preparation of (−)(7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide of the Formula I:



which comprises:

(1) Heating a solution of equimolar amounts of racemic (7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide and (d or l)-ephedrine in a lower alcohol to form a diastereoisomeric mixture of (d or l)-ephedrine salts of (−)(7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide and (+)(7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide;

(2) Recovering the crystalline (d or l)-ephedrine (−) acid salt;

(3) Recycling the (d or l)-ephedrine (+) acid salt by first hydrolysis with aqueous acid followed by racemization with trifluoroacetic anhydride to regenerate the racemic (7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide; and

(4) Acidifying said (d or l)-ephedrine (−) acid salt with aqueous acid to produce (−)(7 or 8)-fluorodibenzo[b,f]-thiepin-3-carboxylic acid-5-oxide.

3. The d- or l-ephedrine salt of racemic (7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide.

4,435,580

PROCESS FOR THE PRODUCTION OF PHTHALIC ANHYDRIDE

Constantine D. Miserlis, Arlington, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed May 3, 1982, Ser. No. 374,284
Int. Cl.[3] C07D *307/89*
U.S. Cl. 549—248 20 Claims

1. A process for producing an acid anhydride, said process comprising the steps of:

(a) reacting an aromatic hydrocarbon or an unsaturated aliphatic hydrocarbon with oxygen in a reactor in the presence of a catalyst so as to produce a gas stream which comprises an anhydride of a carboxylic or discarboxylic acid;

(b) passing said gas stream from said reactor to a partial condenser where a portion of said anhydride is condensed out of said gas stream as a liquid and is recovered;

(c) passing said gas stream from said partial condenser to a venturi scrubber stage and scrubbing said gas stream so as to purge it of substantially all entrained catalyst dust particles;

(d) passing said gas stream from said scrubber stage to at least one switch condenser;

(e) sublimating substantially all of said anhydride remaining in said gas stream so as to form a solid in said at least one condenser; and

(f) recovering said solid from said at least one condenser.

4,435,581

PROCESS FOR THE PRODUCTION OF PHTHALIC ANHYDRIDE

Constantine D. Miserlis, Arlington, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed May 3, 1982, Ser. No. 374,385
Int. Cl.[3] C07D *307/89*
U.S. Cl. 549—248 18 Claims

1. A process for producing an anhydride of a carboxylic or dicarboxylic acid, said process comprising the steps of:

(a) reacting an aromatic hydrocarbon or an unsaturated aliphatic hydrocarbon with oxygen in a reactor in the presence of a catalyst under selected conditions so as to produce a gas stream which comprises an anhydride of a carboxylic or dicarboxylic acid;

(b) passing said gas stream from said reactor to a gas cooler where said gas stream is cooled to a temperature above the auto-ignition temperature of said anhydride;

(c) passing said gas stream from said gas cooler to at least one cyclone in order that said at least one cyclone may purge catalyst particles from said gas stream;

(d) passing said gas stream from said at least one cyclone to a temperature which is below the autoignition temperature of said anhydride yet is above the dew point of said anhydride;

(e) passing said gas stream from said desuperheater to a venturi scrubber stage and scrubbing said gas stream so as to purge it of substantially all entrained catalyst dust particles;

(f) passing said gas stream from said scrubber stage to at least one switch condenser;

(g) sublimating substantially all of said anhydride out of said gas stream so as to cause said anhydride to deposit as a solid in said at least one condenser; and

(h) recovering said solid from said at least one condenser.

4,435,582
MANUFACTURE OF MACROCYCLIC POLYETHERS

Wilhelmus J. Krijnen, and Paulus A. M. Grotenhuis, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

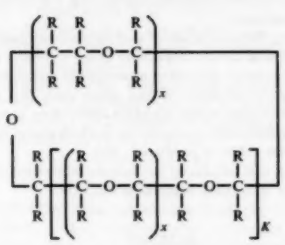
Filed Apr. 9, 1981, Ser. No. 252,648

Claims priority, application United Kingdom, Jun. 11, 1980, 8019112

Int. Cl.³ C07D *323/00, 319/12*

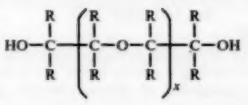
U.S. Cl. 549—352 8 Claims

1. A process for the preparation of macrocyclic polyethers according to the formula:



I

where x is an integer from 1 to 9, K is 0 or 1, and each R, which may be the same or different, represents a hydrogen atom or a lower alkyl group which process comprises reacting a compound according to the formula:



II

where x and R have the meaning as defined herein before, with a sulphonyl halide in the presence of a base and a chlorobenzene solvent.

4,435,583
2-HALO-SUBSTITUTED MONIC ACID A USEFUL AS ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, and Michael J. Crimmin, both of Horsham, England, assignors to Beecham Group p.l.c., England

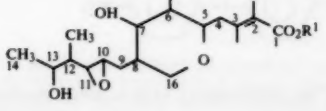
Filed Dec. 7, 1982, Ser. No. 447,516

Claims priority, application United Kingdom, Dec. 9, 1981, 8137147

Int. Cl.³ C07D *309/06;* A61K *31/35*

U.S. Cl. 549—414 3 Claims

1. A compound of formula (I):



(I)

wherein

Y is halogen,

R^1 is hydrogen, a salt forming radical, alkyl or aralkyl.

4,435,584
PREPARATION OF GAMMA-PYRONES

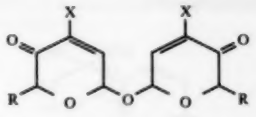
Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 311,252, Oct. 14, 1981, Pat. No. 4,387,235, which is a division of Ser. No. 72,057, Sep. 4, 1979, Pat. No. 4,323,506, which is a division of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Jul. 19, 1982, Ser. No. 399,342

Int. Cl.³ C07D *309/22*

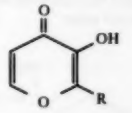
U.S. Cl. 549—415 8 Claims

1. A compound of the formula

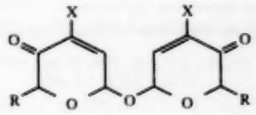


wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; and X is chlorine or bromine.

5. A process for preparing a gamma-pyrone of the formula



which comprises heating in aqueous solution until hydrolysis is substantially complete a compound of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; X is chlorine or bromine.

4,435,585
PROCESS FOR THE PREPARATION OF DIHYDROCINNAMALDEHYDE DERIVATIVES

Yvo Crameri, Oberwil; Paul A. Ochsner, Geneva, and Peter Schudel, Grüt-Wetzikon, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

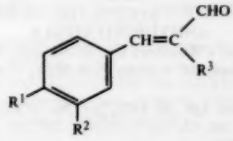
Filed Nov. 17, 1981, Ser. No. 322,135

Claims priority, application Switzerland, Nov. 21, 1980, 8621/80

Int. Cl.³ C07D *317/54;* C07C *45/50*

U.S. Cl. 549—446 8 Claims

1. A process for the manufacture of a compound of the formula



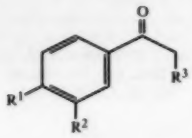
wherein:

R^1 represents isopropyl, n-butyl, sec. butyl, isobutyl, tert. butyl, methoxy or, together with R^2, represents methylene dioxy;

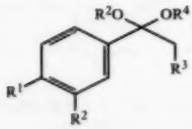
R^2 represents hydrogen or, together with R^1, represents methylenedioxy; and

R^3 represents hydrogen or methyl which comprises:

(a) converting a ketone of the formula

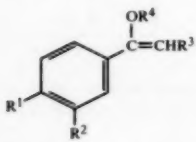


to the corresponding ketal

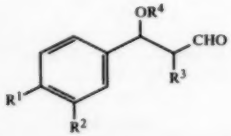


wherein R^4 is methyl or ethyl;

(b) converting said ketal by means of an alcohol cleavage, to the corresponding enol ether



(c) converting said enol ethers to the corresponding β-alkoxy aldehyde



by means of a hydroformylation reaction, and

(d) subjecting said β-alkoxy aldehyde to an alcohol cleavage, wherein the hydroformylation is carried out by reacting said enol ether with carbon monoxide and hydrogen in the presence of a rhodium catalyst wherein:

(a) the ratio of carbon monoxide to hydrogen is between 1 to 4 and 4 to 1;

(b) the temperature is between 50° C. and 150° C; and

(c) the pressure is between 150 and 700 atmospheres.

4,435,586

ETHERIFICATION PROCESS FOR HEXITOLS AND ANHYDROHEXITOLS

Walter M. Kruse, 1 Woodbury Ct., Wilmington, Del. 19805, and John F. Stephen, 200 William Penn Blvd., West Chester, Pa. 19380

Filed Apr. 28, 1982, Ser. No. 372,623
Int. Cl.³ C07D *493/04, 307/20*
U.S. Cl. 549—464 **9 Claims**

1. An improved high yield process for the polyalkylation of hexitols and inner ether derivatives thereof to form polyalkyl ether derivatives of said hexitols which comprises the steps of:

(a) forming an aqueous solution of hexitol or hexitol inner ether dispersed in an organic solvent selected from the group consisting of dimethyl sulfoxide, dimethyl acetamide, dimethyl formamide, toluene, xylene, bis(2-methoxyethyl)ether, and ethyleneglycoldiethyl ether to form an aqueous dispersion,

(b) forming a monoalkali metal alkoxide of said hexitol or hexitol inner ether by the addition of sodium or potassium alkali to said dispersion,

(c) forming a monoalkyl ether and the halide salt of sodium or potassium from said monoalkali metal alkoxide by the addition of an alkyl monohalide having 1–4 carbon atoms to said dispersion,

(d) continuing the alkylation of said formed monoalkyl ether by the addition to said dispersion of substantially stoichiometric amounts of said alkyl monohalide and substantially stoichiometric amounts of said alkali such that no more than a monoalkali metal alkoxide derivative is present in said dispersion until a completely polyalkylated hexitol or hexitol inner ether is produced, and

(e) separating said produced polyalkylated hexitol or hexitol inner ether from said aqueous dispersion.

4,435,587

PROCESS FOR PRODUCING SILICON ISOCYANATE COMPOUNDS

Iwakichi Sugiyama, Narashino; Kiyoshi Endo, Inba, and Yukihisa Takaoka, Inashiki, all of Japan, assignors to Matsumoto Seiyaku Kogyo Kabushiki Kaisha, Japan

Filed Aug. 10, 1982, Ser. No. 406,961
Claims priority, application Japan, Aug. 19, 1981, 56-128734
Int. Cl.³ C07F *7/10*
U.S. Cl. 556—410 **10 Claims**

1. A process for producing a silicon isocyanate compound which comprises reacting a silicon halide compound selected from the group consisting of silicon chloride compounds, silicon bromide compounds and silicon iodide compounds with an isocyanate of the formula [I] $M(NCO)_m$ or a cyanate of the formula [I'] $M(OCN)_m$ wherein M represents a member selected from the group consisting of alkali metals and alkaline earth metals, and m is 1 or 2, in the presence of one or more reaction accelerators selected from the group consisting of alkylene glycols, polyalkylene glycols, ether and ester derivatives thereof and halogen-substituted derivatives thereof, thereby to prepare a silicon isocyanate containing at least one Si—NCO linkage.

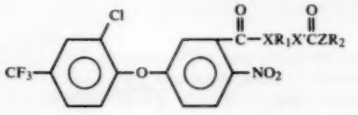
4,435,588

HERBICIDAL COMPOUNDS, COMPOSITIONS, AND METHOD OF USE

Kou-chang Liu, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jul. 15, 1981, Ser. No. 283,402
Int. Cl.³ C07C *69/76*
U.S. Cl. 500—21 **32 Claims**

1. A compound of the formula



where:

X and X' are independently oxygen, sulfur, disulfur, or $-NR_5$;

R_1 is a saturated or unsaturated, straight or branched chain aliphatic diradical C_1–C_{18} wherein one or more of the methylene group may be replaced by oxygen, sulfur,

—SO—, —SO_2—, or —NR_6; where the aliphatic diradical may be optionally substituted with halogen, trihalomethyl, cyano, hydroxy, alkoxy, aryl, cyano or a cyclic alkyl c_3–C_6;

Z is oxygen, sulfur, NR_7, or a direct bond;

R_2 is a saturated straight or branched chain aliphatic hydrocarbon radical C_1–C_8 substituted with halogen, trihalomethyl, cyano, nitro, hydroxy, alkoxy, thioalkoxy or aryl; an aryl radical optionally substituted with halogen, trihalomethyl, cyano, nitro, alkyl, alkoxy or hydroxy; a cyclic alkylene or alkenylene ring C_3–C_6 optionally substituted with halogen, trihalomethyl, hydroxy, alkyl, alkoxy or cyano; or R_2 can be isopropyl when R_1 is —$CH_2CH(CH_2Cl)CH_2$—; ethenyl or acetoxy when X is —NH—; ethyl when X is —$N(CH_3)$— or methyl when R_1 is —C_2H_3=C_2H_3—, —$C_2H_4SSC_2H_4$—, or when X is —$N(CH_3)$—, —NH— or —S— or when X′ is —NH—, —S— or —$N(CH_3)$—;

R_3, R_4, R_5, R_6, and R_7, and are independently hydrogen, a saturated or unsaturated, straight or branched chain aliphatic radical C_1–C_8 optionally substituted with halogen, hydroxy, alkoxy, cyano or nitro.

4,435,589

PROCESS FOR THE PREPARATION OF DIMETHYL SUCCINYLOSUCCINATE, THE DISODIUM SALT THEREOF, DIANILINODIHYDROTEREPHTHALIC ACIDS, THE DIMETHYL ESTERS AND SALTS THEREOF, AND DIANILINOTEREPHTHALIC ACIDS, AND THE DIMETHYL ESTERS AND SALTS THEREOF

Meinhard Rolf, Leverkusen; Detlef-Ingo Schütze, Bergisch-Gladbach; Rütger Neeff, Leverkusen, and Hans-Volker Runzheimer, Odenthal-Gloebusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,047

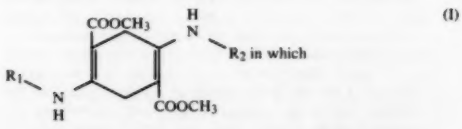
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1981, 3104644

Int. Cl.[3] **C07C** *101/38, 101/68, 103/76*

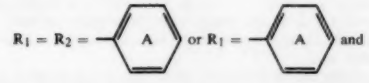
U.S. Cl. 560—48 **14 Claims**

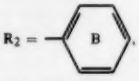
1. Process for the preparation of dimethyl succinylosuccinate or the disodium salt thereof, characterized in that dimethyl succinate is condensed in a 35–45 percent by weight solution of 120–180 percent of theory sodium methylate in methanol and the disodium salt is isolated or dimethyl succinylosuccinate is liberated by means of an acid and is isolated.

2. Process for the preparation of dimethyl dianilinodihydroterephthalates of the formula (I),

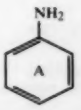


(I)





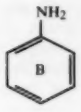
the rings A and B optionally being substituted by 1 to 4 substituents from the group comprising C_1–C_4-alkyl, chlorine, fluorine, C_1–C_4-alkoxy, carbamoyl which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, trifluoromethyl, carboxyl or nitro, or optionally an aromatic ring is fused thereto, characterized in that the suspension of the disodium salt of dimethyl succinylosuccinate, which suspension is obtained by condensation of dimethyl succinate in a 35–45 percent by weight solution of 120–180 percent of theory of sodium methylate in methanol, is acidified, the liberated dimethyl succinylosuccinate is condensed with at least two mols of a compound of the formula



(II)

in which

A has the meaning given under formula (I), or with, altogether, at least 2 mols of a mixture of a compound of the formula (II) and a compound, which differs therefom, of the formula (III)



(III)

in which B has the meaning given under formula (I), or with salts of the amines (III) and/or (II), and the dimethyl esters are isolated.

4,435,590

RADIATION STERILIZABLE ABSORBABLE POLYMERIC MATERIALS AND METHODS FOR MANUFACTURING THE SAME

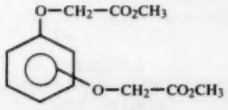
Shalaby W. Shalaby, Mountainville, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 6, 1981, Ser. No. 290,641

Int. Cl.[3] **C07C** *69/76*

U.S. Cl. 560—61 **6 Claims**

1. A relatively pure cystalline monomer of the following general formula:



where the benzene ring is 1,2-, 1,3-, or 1,4-substituted.

4,435,591

COMPOUND WITH ANALGESIC, ANTIINFLAMMATORY AND ANTIPYRETIC ACTIVITY, AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Pomezia, Italy

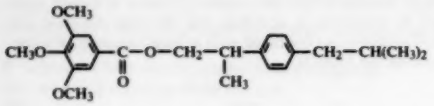
Filed Jun. 22, 1982, Ser. No. 390,979

Claims priority, application Italy, Mar. 10, 1982, 20074 A/82

Int. Cl.[3] **C07C** *69/76*

U.S. Cl. 560—73 **2 Claims**

1. The compound 2-(4-isobutylphenyl)1-propanol 3,4,5-trimethoxybenzoate of formula I:



(I)

4,435,592

PROCESS FOR THE PREPARATION OF POLYETHER-ESTER POLYOLS

Curtis J. Reichel, Wyandotte, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 29, 1982, Ser. No. 426,312
Int. Cl.³ C07C 67/08, 67/26
U.S. Cl. 560—91 10 Claims

1. A process for the preparation of a polyether-ester polyol comprising (a) reacting an alkaline catalyst, selected from the group consisting of hydroxides and alkoxides of sodium, potassium, lithium, rubidium and cesium, containing polyoxyalkylene polyether polyol with tetrahydrophthalic anhydride to form a half acid ester, (b) reacting the product of (a) with an alkylene oxide and (c) removing the catalyst.

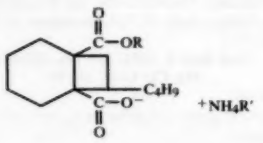
4,435,593

ADDUCTS OF 1-CYCLOHEXENE-1,2-DICARBOXYLIC ANHYDRIDE WITH OLEFINS

Ellis K. Fields, River Forest, and Tayseer S. Nimry, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 330,154, Dec. 14, 1981, Pat. No. 4,371,701.
This application Sep. 30, 1982, Ser. No. 430,340
Int. Cl.³ C07C 69/753
U.S. Cl. 560—119 3 Claims

1. A composition of the structural formula



wherein R is an alkyl moiety of from 5 to 18 carbon atoms and R′ is an alkyl moiety of from 8 to 18 carbon atoms.

4,435,594

PROCESS FOR THE PREPARATION OF METHACRYLIC ACID ESTERS

Hiroshi Matsumura; Fumiki Murakami, and Hiroshi Sonobe, all of Otake, Japan, assignors to Minemet Recherche, Trappes, France

Filed Oct. 30, 1979, Ser. No. 89,497
Claims priority, application Japan, Oct. 31, 1978, 53-133858
Int. Cl.³ C07C 67/48
U.S. Cl. 560—205 6 Claims

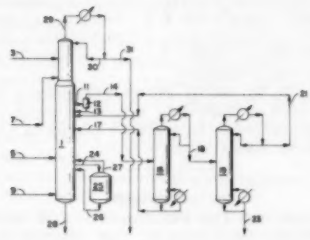
1. In a process for preparing a methacrylic acid ester by reacting methacrylic acid with a lower aliphatic alcohol in the liquid phase using a solid acidic catalyst at a molar ratio of alcohol to methacrylic acid of 1.2–3.0:1 and a reaction temperature of 70°–100° C., the improvement comprising: (1) extracting substantially only the unreacted alcohol from the reaction mixture containing unreacted alcohol, unreacted methacrylic acid, ester product and impurities with an aqueous solvent at a temperature of 40° to 60° C.; (2) removing the low boiling substances and water from the extraction-residual mixture by distillation whereby an organic residue is generated containing methacrylic acid ester and unreacted methacrylic acid; and (3) separating said unreacted methacrylic acid and said methacrylic acid ester by distillation.

4,435,595

REACTIVE DISTILLATION PROCESS FOR THE PRODUCTION OF METHYL ACETATE

Victor H. Agreda, and Lee R. Partin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,626
Int. Cl.³ B01D 3/36
U.S. Cl. 560—234 28 Claims



27. A process for the production from methanol and glacial acetic acid of methyl acetate which is at least about 99.5% pure, wherein said acetic acid functions both as reactant and as extractive agent, said process comprising the steps of

(a) selecting a design for a single reactive distillation column and a residence time thereof to provide intimate contact sufficient to enable said acetic acid to be used both as a reactant and as an extractive agent within said column,

(b) countercurrently flowing approximately stoichiometric quantities of glacial acetic acid and methanol through said single reactive distillation column in the presence of sulfuric acid, which is fed to the column at a rate of about 1 kg of sulfuric acid per 100 kg of acetic acid, so as to provide intimate contact in said column between said acetic acid and methanol, between said acetic acid and methyl acetate/water azeotrope, and between said acetic acid and methyl acetate/methanol azeotrope, the residence time in said column being at least about 2.4 hours and the reflux ratio being about 1.5 to 1.7;

(c) removing intermediate boiling compounds comprising methyl propionate, methyl butyrate, isopropyl acetate, and mixtures thereof from a vapor sidedraw stream which is continuously removed from and returned to the middle to upper part of the reaction section of said column;

(d) controlling the methanol feed rate within about ±10% of the target flow rate so as to maintain at a preselected constant level the temperature of a point located in the column below the methanol feed and controlling the methyl acetate distillate flow rate within about ±5% of the target flow rate so as to maintain at a preselected constant level the temperature of a point located in the middle to upper part of the reaction section of said column; and

(e) continuously removing said high purity methyl acetate from the top of said column and continuously removing water from the bottom of said column.

4,435,596

PROCESS OF PRODUCING TEREPHTHALIC ACID

Yulin Wu, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 894,069, Apr. 6, 1978, Pat. No. 4,357,257.
This application Aug. 23, 1982, Ser. No. 410,766
Int. Cl.³ C07C 51/347
U.S. Cl. 562—481 3 Claims

1. In a method of producing terephthalic acid wherein potas-

sium benzoate is disproportionated to form dipotassium terphthalate which is converted to terephthalic acid, the improvement comprising:

(a) charging an aqueous solution of potassium benzoate to a dryer so as to produce a sheet of crystals of said potassium benzoate;

(b) subjecting said sheet of crystals to a powder-forming apparatus so as to form a powder of said crystals, the size of said powder being within the range from about 50 mesh to about 140 mesh and the shape of said powder being granular;

(c) mixing said powder with terphenyl so as to form a low viscosity slurry; and then

(d) transporting said low viscosity slurry to a disproportionation reactor.

4,435,597

PREPARATION OF CARONALDEHYDE ACID AND DERIVATIVES THEREOF

Dieter Arlt, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

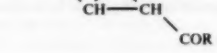
Filed Mar. 5, 1982, Ser. No. 355,034

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111849

Int. Cl.³ C07C *51/04*

U.S. Cl. 562—506 **5 Claims**

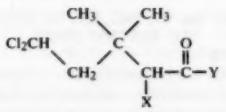
1. A process for the preparation of caronaldehyde acid or a derivative thereof of the formula



in which

R is O^-Me^+, and

Me^+ is an equivalent of an alkali metal, alkaline earth metal or ammonium cation, comprising reacting a 2-halogeno-3,3-dimethyl-5,5-dichloropentanoic acid halide of the formula



wherein X and Y each independently is a halogen atom, with a base selected from the group consisting of an alkali metal hydroxide, alkaline earth metal hydroxide, tertiary amine, alkali metal carbonate and alkaline earth metal carbonate in the presence of water.

4,435,598

PROCESS FOR THE CATALYTIC OXIDATION OF PROPYLENE TO ACRYLIC ACID

James A. Hinnenkamp, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,470

Int. Cl.³ C07C *51/25, 51/50, 57/045, 57/075*

U.S. Cl. 562—546 **8 Claims**

1. In a process for preparing acrylic acid by the liquid phase catalytic oxidation of propylene, the improvement for increasing the selectivity to acrylic acid, decreasing the production of the combustible side product carbon dioxide, enhancing the catalyst utility and providing a reaction mixture having a higher final concentration of acrylic acid which comprises conducting the process in the presence of an effective amount of hydroquinone.

4,435,599

PARA-NITRODIPHENYLAMINE SYNTHESIS

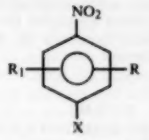
Budd H. Sturm, Hartville, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 26, 1982, Ser. No. 444,633

Int. Cl.³ C07C *85/18, 85/24*

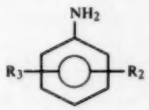
U.S. Cl. 564—433 **15 Claims**

1. A process wherein (1) a para-halonitrobenzene conforming to the following structural formula:



(II)

wherein R and R_1 are selected from the group consisting of hydrogen and alkyl radicals of 1 to 9 carbon atoms and wherein X is a halogen selected from the group consisting of chlorine and bromine is reacted with (2) a primary aromatic amine of the following structural formula:



(III)

wherein R_2 and R_3 are radicals selected from the group consisting of hydrogen, alkyl radicals of 1 to 9 carbon atoms, alkoxy radicals of 1 to 9 carbon atoms and cycloalkyl radicals of 5 to 6 carbon atoms; (3) in the presence of a neutralizing agent selected from the group consisting of alkaline metal salts, oxides of alkali metal salts and alkali metal hydroxides; (4) a copper catalyst system at a concentration of at least 0.1 parts by weight per 100 parts by weight of the para-halonitrobenzene; (5) at a temperature of 100° to 250° C. (6) at a pressure from atmospheric to about 300 kPa and (7) with an excess of primary aromatic amine wherein the improvement is characterized in that the copper catalyst system has added thereto at least one zinc (II) compound selected from a group consisting of zinc (II) salts, zinc (II) oxides, zinc (II) sulfides and organometallic zinc (II) compounds.

4,435,600

PROCESS FOR PREPARATION OF TERTIARY BUTYL HYDRAZINE

Yoichi Hasegawa, Marugame; Mineo Nakagawa, Takamatsu, and Syuji Hara, Zentsuji, all of Japan, assignors to Japan Hydrazine Co., Inc., Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,000

Int. Cl.³ C07C *109/02*

U.S. Cl. 564—464 **8 Claims**

1. A process for the preparation of a tertiary butyl hydrazine hydrohalogenide, which comprises reacting a hydrazine salt of a hydrohalogenic acid with tertiary butanol in the presence of a hydrazine dihydrohalogenide or a hydrogen halide.

4,435,601

PREPARATION OF POLYPHENOLS BY OXIDATION OF HYDROXYBENZALDEHYDES

Karel Formanek, Serezin Du Rhone; Daniel Michelet, Tassin La Demi-Lune, and Dominique Petre, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 7, 1981, Ser. No. 281,248
Claims priority, application France, Jul. 11, 1980, 80 15753
Int. Cl.³ C07C 45/64
U.S. Cl. 568—430 36 Claims

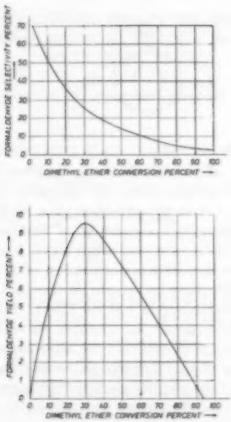
1. In a process for the preparation of optionally aldehyde substituted polyphenols by oxidizing, with hydrogen peroxide, a hydroxybenzaldehyde bearing at least one aldehyde substituent ortho- and/or para- to the nuclear hydroxyl group, in an aqueous reaction medium and in the presence of an alkali or alkaline earth metal base, the improvement comprising maintaining the pH of the said reaction medium in the range of from about 2 to 7 throughout the course of the oxidation reaction, with the hydrogen peroxide and an alkali metal base or alkaline earth metal base being added gradually to the reaction medium, whereby at least one formyl of the hydroxybenzaldehyde is oxidized to a hydroxyl.

4,435,602

CONVERSION OF DIMETHYL ETHER TO FORMALDEHYDE

Robert M. Lewis, Sugarland, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 26, 1982, Ser. No. 402,017
Int. Cl.³ C07C 47/04
U.S. Cl. 568—470 6 Claims



1. A process for converting dimethyl ether to formaldehyde which comprises contacting the dimethyl ether with oxygen at a temperature ranging from about 250° C. to about 500° C. with a catalyst comprising naturally occurring manganese nodules.

4,435,603

METHOD FOR PREVENTING CAKING OF POLYOLS

Boy Cornils, Dinslaken; Hanswilhelm Bach, Duisburg; Roderich Gärtner, Dinslaken, and Wilhelm Gick, Duisburg, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,772
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010138
Int. Cl.³ C07C 27/26, 29/94
U.S. Cl. 568—701 17 Claims

1. A polyol composition consisting essentially of a solid polyol which is crystalline under normal conditions and a tertiary amine containing at least two identical organic substituents, each having 2 to 20 carbon atoms, said tertiary amine being present in said polyol composition in a concentration of 0.005 to 0.25 percent by weight, based upon the weight of said polyol.

4,435,604

METHOD FOR THE RECOVERY OF PENTAERYTHRITOL FROM THE RESIDUAL MIXTURES OF THE SYNTHESIS FROM ACETALDEHYDE AND FORMALDEHYDE

Gianalvise Carazzolo, Castellanza; Giancarlo Colombo, Milan; Giulio Gavella, Imola; Silvano Giacomuzzo, Cassano Magnago, and Franco Gianetti, Gallarate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 19, 1982, Ser. No. 379,778
Claims priority, application Italy, May 22, 1981, 21891 A/81
Int. Cl.³ C07C 31/24, 29/88
U.S. Cl. 568—854 14 Claims

1. A method for recovering pentaerythritol from a residual mixture of the synthesis of pentaerythritol from acetaldehyde and formaldehyde containing, besides other by-products, at least 20% by weight of formals, which method is characterized in that said formals are transacetalized by contacting the residual mixture containing them, in a liquid medium and in the presence of an acid selected from the group consisting of sulphuric, phosphoric paratoluene-sulphonic acids and the cation-exchange resins, with a saturated aliphatic alcohol selected from the group consisting of methanol, ethylene glycol and 1,3-propylene glycol, the amount of water in the transacetalization reacting mixture being equal to or lower than 10% by weight.

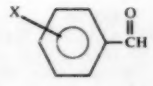
4,435,605

PROCESS FOR PREPARATION OF 2-PHENYLETHYL ALCOHOLS FROM AROMATIC ALDEHYDES

Susan B. Butts, and George E. Hartwell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

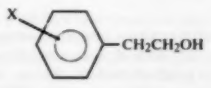
Filed Aug. 27, 1982, Ser. No. 412,333
Int. Cl.³ C07C 27/22
U.S. Cl. 568—878 7 Claims

1. A process for the preparation of a 2-phenylethyl alcohol which comprises contacting a aromatic aldehyde with carbon monoxide and hydrogen in a solvent comprising an oxygenated polar hydrocarbon and water, in the presence of a catalytic amount of a catalyst comprising a cobalt compound, a ruthenium salt and an iodine salt, at elevated temperatures and a pressure of between about 600 and 45,000 psi, wherein the aromatic aldehyde is represented by the formula



I

and the 2-phenylethyl alcohol is represented by the formula



II

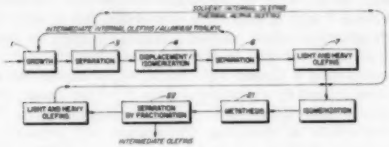
wherein X is a hydrogen, halogen, alkyl, alkoxy or nitro group.

4,435,606

PROCESS FOR THE PREPARATION OF LINEAR OLEFINS FROM TRIETHYLALUMINUM AND TRIPROPYLALUMINUM VIA GROWTH, ISOMERIZATION AND METATHESIS

Kaye L. Motz; Paul H. Washecheck; Ronald L. Poe, and James E. Yates, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 24, 1981, Ser. No. 334,406
Int. Cl.³ C07C 3/21, 3/02
U.S. Cl. 585—324 27 Claims



1. A process for extending catalyst life during the alteration of the carbon atom distribution of internal olefins to obtain internal olefin products containing a majority of mid-range homologues wherein air or oxygen is excluded from the olefins throughout the process from growth through metathesis, the process comprising

(1) reacting ethylene with aluminum trialkyl in the presence of an internal olefin solvent in a growth step to form aluminum alkyls and linear thermal alpha olefins;

(2) removing the inert internal olefin solvent comprising from 10 to 14 carbon atoms and thermal linear alpha olefins formed containing up to about 14 carbon atoms as overhead in a fractional distillation, and passing these olefins to isomerization in step 5(*a*);

(3) passing the remaining products of (2) into a vessel containing a transition metal catalyst and adding ethylene or ethylene and propylene wherein aluminum alkyl and alpha olefins are formed in a displacement reaction;

(4) passing the product of (3) through an isomerization reactor containing a transition metal catalyst to transform alpha olefins present into internal olefins, then

(5) subjecting the product of (4) to separation to obtain internal olefins containing up to about 10 carbon atoms, a stream containing from 15 to 30 carbon atom internal olefins and a stream having internal olefins containing from about 10 to about 14 carbon atoms and aluminum trialkyls prepared by displacement in (3) and returning these 10 to 14 carbon atom materials to the growth reactor as solvent and recovered aluminum alkyl as a reactant, while the overhead containing internal olefins up to about 10 carbon atoms together with the overhead stream from step 2 are combined and wherein the carbon atom distribution of both the alpha-olefins and internal olefins is altered to obtain internal olefins controlled with respect to proportions by (a) passing a feedstream of internal olefins containing up to about 10 carbon atoms and from about 15–30 carbon atoms together with the mixture of 10–14 carbon atom internal olefins and up to 14 carbon atom alpha-olefins from the separator following growth through a vessel containing an isomerization catalyst to randomize the internal olefinic double bond, and (b) passing the randomized internal olefin product of (a) through a closely coupled metathesis reactor to alter the carbon atom distribution of linear carbon chains, said distribution having an average molecular weight substantially equal to the feed internal olefins, then (c) separating product carbon atom range internal olefins from the product, while (d) recycling non-product carbon atom range internal olefins to (a), (b), or both.

4,435,607

DEHYDROGENATION OF DEHYDROGENATABLE HYDROCARBONS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 258,358, Apr. 28, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,628
Int. Cl.³ C07C 5/40, 5/48
U.S. Cl. 585—443 11 Claims

1. A process for the dehydrogenation of a dehydrogenatable hydrocarbon with separate and intermediate selective oxidation of hydrogen which compises:

(a) contacting said hydrocarbon with a dehydrogenation catalyst comprising an alkaline metal-promoted iron compound in a first reaction-dehydrogenation zone in the presence of steam to produce a first reaction-dehydrogenation zone effluent stream comprising a mixture of uncoverted hydrocarbons, dehydrogenated hydrocarbons, hydrogen and steam;

(b) removing said first-reaction dehydrogenation zone effluent from said first reaction-dehydrogenation zone;

(c) passing said removed first-reaction dehydrogenation zone effluent of step (b) to a second-reaction oxidation zone, which is separate and discrete from said-reaction dehydrogenation zone;

(d) contacting said first-reaction dehydrogenation zone effluent in said second-reaction oxidation zone with an oxygen-containing gas to selectively oxidize said hydrogen within said first-reaction dehydrogenation zone effluent to the substantial exclusion of oxidation of said unconverted and dehydrogenated hydrocarbons in the presence of an oxidation catalyst consisting essentially of about 0.01 to about 5 wt% of a Group VIII noble metal, about 0.01 to about 5wt% of a Group IVA metal, and from about 0.01 to about 10% by weight of a metal of Group IA or IIA composited on a highly porous alumina support at oxidation conditions, wherein said exothermic selective oxidation of said hydrogen provides additional heat and thereby raises the temperature of said unconverted and dehydrogenated hydrocarbons;

(e) withdrawing said unconverted and dehydrogenated hydrocarbons from said second-reaction oxidation zone having an increased temperature with respect to the temperature of said first-reaction dehydrogenation effluent zone;

(f) passing said removed second reaction-oxidation zone product stream of step (e) to a third-reaction dehydrogenation zone, containing a dehydrogenation catalyst comprising an alkaline metal promoted iron compound at dehydrogenation conditions to produce dehydrogenated hydrocarbons; and

(g) withdrawing and recovering said dehydrogenated hydrocarbons.

4,435,608

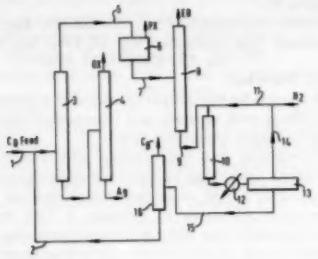
XYLENE ISOMERIZATION

Wicher T. Koetsier, Mijnsheerenland, and Johannes P. Verduijn, Spijkenisse, both of Netherlands, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 4, 1981, Ser. No. 327,176
Claims priority, application United Kingdom, Dec. 12, 1980, 8039961
Int. Cl.³ C07C 5/22
U.S. Cl. 585—480 6 Claims

1. A process for obtaining ethylbenzene and para-xylene and/or ortho-xylene from a mixed C_8 feed, which process comprises recovering ethylbenzene from the mixed C_8 feed to leave an ethylbenzene-depleted feed containing mixed xylenes and less than 5 wt.% ethylbenzene, thereafter contacting the ethylbenzene-depleted feed under isomerization conditions with a catalyst comprising a gallosilicate zeolite having a mole ratio of SiO_2:Ga_2O_3 greater than 5 and a consistent index of from 1 to 12, said gallosilicate zeolite overlying a silica core,

the silica core and the zeolite having substantially the same crystalline structure, to give an isomerate enriched in para-



xylene and ortho-xylene, and recovering para-xylene and/or ortho-xylene from the isomerate which is thereafter recycled to the ethylbenzene recovery step.

4,435,609

ISOMERIZATION OF BUTENE-1 TO BUTENE-2 IN ISOBUTYLENE

Wolfgang W. J. Gschwendtner, Cologne, Fed. Rep. of Germany, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 31, 1983, Ser. No. 499,351

Claims priority, application United Kingdom, Jun. 8, 1982, 8216535

Int. Cl.³ C07C *5/30, 7/01*

U.S. Cl. 585—670 **13 Claims**

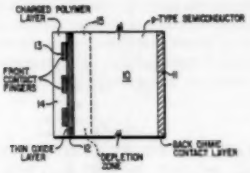
1. A method of treating an isobutylene feed which contains 0.05 to 0.5 wt% of n-butene-1 to convert n-butene-1 to n-butene-2 with at least 65% conversion and at most 0.3% hydrogenation, which method comprises passing the isobutylene feed and hydrogen, in the gas phase, over a catalyst system comprising a Group VIII metal, under isomerisation conditions defined by a pressure of from 3 to 5 bar gauge, a temperature of from 40° to 50° C., a space velocity of from 150 to 300 vol/vol/hr at operating temperature and pressure, a mass velocity of from 1.1 to 1.5 metric tons/m^2/hour and a hydrogen/isobutylene feed volume ratio of at most 2.5% at operating temperature and pressure.

4,435,610

ELECTRET SEMICONDUCTOR SOLAR CELL

Martin M. Perlman, Montreal, and Andre Y. Filion, Greenfield Park, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 14, 1983, Ser. No. 458,019
Claims priority, application Canada, Sep. 7, 1982, 410894
Int. Cl.³ H01L 31/06, 31/18
U.S. Cl. 136—255 8 Claims



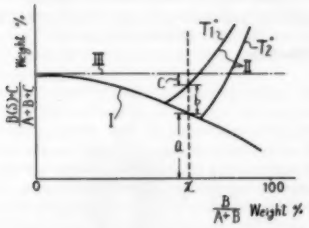
1. An induced junction solar cell comprising a p-type semiconductor substrate; a thin oxide layer on a front surface of said substrate; a grid-type rectifying contact on said oxide layer; a charged polymer coating on said front surface and rectifying contact; and an ohmic contact layer on the other surface of said substrate.

4,435,611

CONDUCTIVE PASTE

Kenji Ohsawa, Yokohama; Takao Ito; Shimetomo Fueki, both of Tokyo; Masayuki Osawa, and Keiji Kurata, both of Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 246,902, Mar. 23, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,611
Claims priority, application Japan, Mar. 24, 1980, 55-37152
Int. Cl.³ H05K 1/09
U.S. Cl. 174—68.5 6 Claims



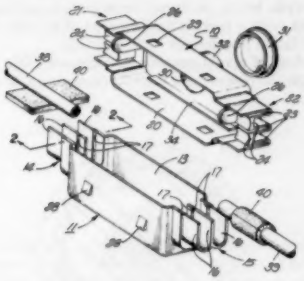
1. A printed circuit board comprising:
an insulating substrate,
a first conductive pattern located on one surface of said substrate,
a second conductive pattern insulated from said first conductive pattern, and
a conductive material electrically connecting said two conductive patterns together, said conductive material being formed of a conductive paste comprising a melt of gallium and a metal element which forms a eutectic mixture with gallium, said melt containing at least 20 weight parts of said metal element for 100 weight parts of said melt, and a metal powder which alloys with gallium uniformly dispersed in said melt, said metal powder being present in an amount of between 10 and 50 weight parts for 100 weight parts of said melt, the amount of said metal element and said metal powder providing a solids content in said conductive paste between 30 to 50% by weight at a predetermined temperature, said conductive paste being alloyed and hardened.

4,435,612

CABLE SPLICE HOUSING

Donald J. Smith, Woodland Hills, Calif., assignor to Communication Technology Corporation, Los Angeles, Calif.

Filed Mar. 9, 1982, Ser. No. 356,374
Int. Cl.³ H02G 15/113
U.S. Cl. 174—92 7 Claims



1. A housing for an electrical cable splice, comprising:
a first shell of generally rectangular cross-section having parallel sides and a bottom defining a first central section and opposed first end sections, with each of said first end sections having a wall defining at least one channel leading to said first central section and defining an open slot for receiving an electrical cable; and
a second shell of generally rectangular cross-section having parallel sides and a bottom defining a second central section and opposed second end sections, with each of said second end sections having channel closure means for sliding in said channels;
with the end sections of one of said shells having projecting tabs and with the end sections of the other of said shells having means defining abutments for said tabs;
with one said shells sliding over the other of said shells with said parallel sides overlying each other bringing said central sections together to form an open main compartment defined by said overlying parallel sides, top and bottom, and
with said channel closure means sliding part way in said channels to form entrance passages for electrical cable and with said tabs sliding in said end sections of said other shell against said abutments closing said entrance passages for blocking liquid flow from said main compartment,
with said tabs selectively breakable to provide open entrance passages through said channels into said main compartment.

4,435,613

SEMICONDUCTOR PACKING COMPOSITION FOR AN UNDERSEA CABLE, A CABLE CONTAINING SAID SUBSTANCE AND A METHOD OF MANUFACTURING SUCH A CABLE

Jean Gaubert, St-Andre de Corcy, France, assignor to Les Cables de Lyon, Clichy, France

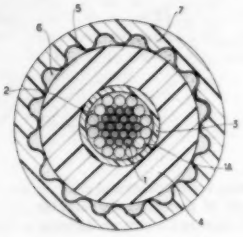
Filed Apr. 20, 1982, Ser. No. 370,222
Claims priority, application France, Apr. 30, 1981, 81 08653
Int. Cl.³ H01B 7/14, 1/24, 13/22
U.S. Cl. 174—102 SC 7 Claims

1. A semiconductor packing composition for packing a cable core made of conductors disposed axially, with said conductors being surrounded by a polyethylene layer which includes semiconductive material, then by a layer of insulating polyethylene, said packing composition comprising reticulated nitrile

rubber with carboxylic bonds, an epoxy resin, carbon black with a specific surface area of at least 100 m^2/g, an anti-oxidizing agent and a reticulation accelerator.

4. An undersea cable for transporting electric power, said cable comprising a core made of conductors disposed axially, a polyethylene layer surrounding said conductors, said layer including a semiconductive material, a layer of insulating polyethylene surrounding said polyethylene layer including said semiconductive material and a packing composition disposed between said conductors of the core and within said polyethylene layer including said semiconductive material, and wherein said packing composition comprises reticulated nitrile rubber with carboxylic bonds, an epoxy resin an anti-oxidizing agent, carbon black with a specific surface area of at least 100 m^2/g, and a reticulation accelerator.

6. A method of manufacturing an undersea cable for transporting electrical power, said method comprising, in order, the steps of:



(a) forming a core by disposing conductors axially;
(b) injecting between the conductors of the core a packing composition made of a mixture of liquid nitrile rubber with carboxylic bonds, an epoxy resin, carbon black whose specific surface area is at least equal to 100 m^2/g, an anti-oxidizing agent, and a reticulation accelerator;
(c) surrounding the axially disposed conductors with a layer of polyethylene including semiconductive material; and
(d) surrounding said layer of polyethylene including semiconductive material with a layer of insulating polyethylene, and wherein the step of forming the core by disposing conductors axially comprises assembling the conductors of the core to form a cord in a die, and wherein said method further comprises the steps of applying a metal screen around the layer of insulating polyethylene and depositing said packing composition additionally within said longitudinal corrugations between said metal screen and said layer of insulating polyethylene.

4,435,614

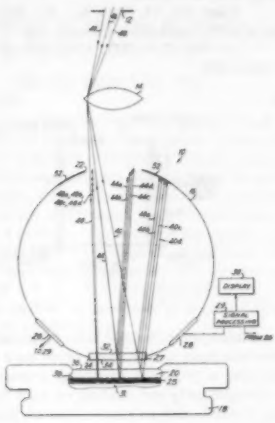
ELONGATED PRINTED CIRCUIT FLEXIBLE CABLES AND METHOD OF MAKING THE SAME

Robert R. McAusland, Seattle, Wash., assignor to Advanced Technology Laboratories, Bellevue, Wash.

Filed Feb. 28, 1983, Ser. No. 470,692
Int. Cl.³ H01B *7/04, 7/08, 13/00*
U.S. Cl. 174—117 PC **8 Claims**

1. A long, flexible printed circuit board cable comprising:
(a) A pattern of cables on a flexible substrate, said pattern comprising at least two substantially parallel, elongated sections joined by a perpendicular connecting section and separated by a slit;
(b) A fold through one of said elongated sections on a fold line substantially perpendicular to said slit; and
(c) A fold through said connecting section along a second fold line substantially perpendicular to said first fold line and substantially aligned with said slit.

6. The method of making a long, flexible printed circuit board cable comprising:
(a) Forming a pattern of cables on a flexible substrate, said pattern comprising at least two substantially parallel, elongated sections joined by a perpendicular connecting section;
(b) Forming a slit between said elongated sections by slitting said pattern up to said connecting section;



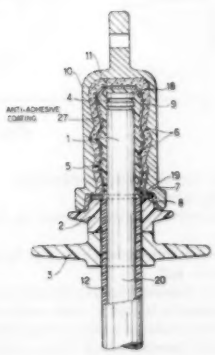
(c) Folding one of said elongated sections on a fold line substantially perpendicular to said slit; and
(d) Folding said connecting section along a second fold line substantially perpendicular to said first fold line and substantially aligned with said slit.

4,435,615

SEALED END CAP MOUNTING FOR LAMINATED INSULATOR CORE

Alexandre Kaczerginski, Bellerive sur Allier, and Michel Willem, Vichy, both of France, assignors to Societe Anonyme dite: CERAVER, Paris, France

Filed Jan. 27, 1982, Ser. No. 343,343
Claims priority, application France, Feb. 5, 1981, 81 02205
Int. Cl.³ H01B *17/02, 17/38*
U.S. Cl. 174—189 **8 Claims**



1. An insulator having an elongated core including a fiber reinforced rod of organic material, a mass of hardened organic substance formed on one end of the rod, a thimble encasing the mass of organic substance, the thimble having a side wall of corrugated profile in longitudinal cross section and a rim, and a protective insulating sheath covering the rod and sealed to the rim of the thimble, and a fixing cap having an internal

surface defining a core-receiving recess, an embedding substance fixed to the internal surface of the cap defining the core-receiving recess, the thimble being slidably embedded in said embedding substance, wherein the improvement comprises:

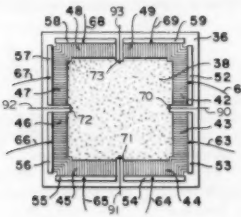
the mass of hardened organic substance directly contacts the inner surface of the corrugated side wall of the thimble to form a rigid connection therewith, and

the outer surface of the corrugated side wall of the thimble is coated with an anti-adhesive layer that does not adhere to the embedding substance, so that the thimble, the mass of hardened organic substance, and the one end of the rod form a rigid assembly completely sealed to the insulating sheath and resistant to large tensile forces applied between the fixing cap and the other end of the core.

4,435,616
GRAPHICAL DATA ENTRY APPARATUS

Victor B. Kley, 1119 Park Hills Rd., Berkeley, Calif. 94708

Filed Aug. 25, 1981, Ser. No. 296,238
Int. Cl.³ G08C *21/00*
U.S. Cl. 178—18 **13 Claims**



2. A graphical entry device comprising an electrically insulated substrate; and a patterned layer on the substrate wherein the patterned layer includes

a generally rectangular resistive graphic area with four edges and four corners, each of the four edges defining a midportion separating a pair of spaced joining portions extending from the midportion to the respective corners,

four pairs conductor strips spaced from and extending along the respective pairs of joining portions,

four pairs of resistive edge connecting means joining the respective pairs of conductor strips to the respective pairs of joining portions, said resistive edge connecting means each having an effective resistance parallel to the respective joining portions substantially greater than that of the graphic area and the respective conductor strips, and

four conductors connected to the respective midportions for providing analog-to-digital converter reference voltages.

4,435,617
SPEECH-CONTROLLED PHONETIC TYPEWRITER OR DISPLAY DEVICE USING TWO-TIER APPROACH

David T. Griggs, 5128 S. Rolling Rd., Baltimore, Md. 21227

Filed Aug. 13, 1981, Ser. No. 292,717
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—44 **28 Claims**

1. A two-tier method of converting an audio input, comprising words maade up of various sounds in a spoken sequence, into a visible form, comprising a sequence of corresponding phonemes, said method comprising the steps of:

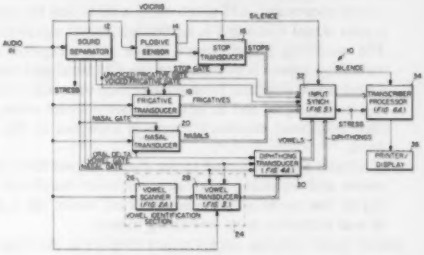
(a) breaking down the spoken sequence of sounds into syllabits, each syllabit comprising a group of classes of sounds;

(b) grouping the syllabits into syllabit groups, each syllabit group defining corresponding possible words;

(c) providing, for each of said possible words corresponding to each syllabit group, a respective skeletal sequence of phonemes comprising a corresponding grouping of phonemes;

(d) determining, for each distinctive syllabit group, the phonemes occurring therein so as to develop an input sequence of phonemes for each syllabit group;

(e) comparing the input sequence of phonemes for each syllabit group with the respective skeletal sequence of phonemes of each of the corresponding possible words so



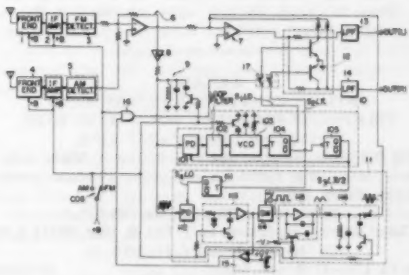
as to determine, with reference to the phonemes in each grouping of phonemes, which possible word has a skeletal sequence of phonemes which contains, in a given sequence, phonemes all of which are found, in said given sequence, in the input sequence of phonemes, thereby identifying each of said words of said audio input; and

(f) providing said identified words of said audio input in said visible form.

4,435,618
ADJACENT STATION INTERFERENCE REJECTING CIRCUIT

Masakazu Fujishima, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Jan. 20, 1982, Ser. No. 341,080
Claims priority, application Japan, Jan. 28, 1981, 56-11142
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—7 **6 Claims**



1. An adjacent station interference rejecting circuit of a receiver comprising:

a cancel signal forming circuit coupled to an AM detector and, responsive to a beat signal resulting from interference between a receiving station signal and an adjacent station signal and contained in an AM detected signal to produce a cancel signal which is synchronized with the beat signal; and

a mixing circuit connected to receive the AM detected signal of said AM detector and the cancel signal to combine the detected output signal and the cancel signal to remove the beat signal contained in the AM detected signal.

2. An FM/AM radio receiver comprising:

reception band switching means for switching the reception band of said radio receiver between FM and AM bands;

FM receiving circuit means which is enabled to demodulate an FM broadcast signal when said reception band switching means is switched to the FM band;

AM receiving circuit means which is enabled to demodulate an AM broadcast signal when said reception band switching means is switched to the AM band;

first circuit means coupled to outputs of said FM receiving circuit means and AM receiving circuit means for passing a pilot signal contained in a detected output signal of said FM receiving circuit means when said reception band switching means is switched to the FM band and passing a beat signal resulting from interference between a receiving station signal and an adjacent station signal when said reception band switching means is switched to the AM band;

PLL circuit means coupled to the output of said first circuit means and including a voltage-controlled oscillator having its free running frequency selected under the control of said reception band switching means;

cancel signal forming circuit means coupled to the output of said first circuit means and responsive to output signals from said PLL circuit means to form, when receiving an FM stereo broadcast signal, a pilot signal cancellation signal having a frequency, a phase and an amplitude necessary for calcelling a pilot signal contained in an FM detected output signal from said FM receiving circuit means and produce, when receiving an AM broadcast signal, a beat signal cancellation signal having a frequency, a phase and an amplitude necessary for cancelling the beat signal contained in an AM detected output signal of said AM receiving circuit means;

a mixing circuit coupled to said AM receiving circuit means, FM receiving circuit means and cancel signal forming circuit, for combining, when receiving the FM stereo broadcast signal, the detected output signal of said FM receiving circuit means and an output signal of said cancel signal forming circuit means to cancel the pilot signal contained in the FM detected output signal and combining, when receiving the AM broadcast signal, the detected output signal of said AM receiving circuit means and the output signal from said cancel signal forming circuit means to cancel the beat signal contained in the AM detected output signal.

4,435,619

SWITCHING NETWORK INTERFACING TELEPHONE-EXCHANGE EQUIPMENT WITH TWO-SUBSCRIBER PARTY LINE

Ennio Bonaparte, Seregno, and Virgilio Mosca, Milan, both of Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Oct. 7, 1981, Ser. No. 309,479

Claims priority, application Italy, Oct. 9, 1980, 25213 A/80

Int. Cl.³ H04M *3/14, 3/16*

U.S. Cl. 179—17 R **14 Claims**

1. In a telephone system wherein an electronic exchange communicates with two subscriber sets via a line loop with a first and a second conductor respectively including a first and a second line relay, each conductor being normally connected to an associated set via contacts closed in the unoperated state of the line relay in the other conductor, each set including a hook switch operable by the subscriber to ground the associated conductor, each line relay in an operated state connecting the associated set across said line loop to the exclusion of the opposite set,

the combination therewith of a switching network interfacing said line loop with call-control circuitry at the exchange, said switching network comprising:

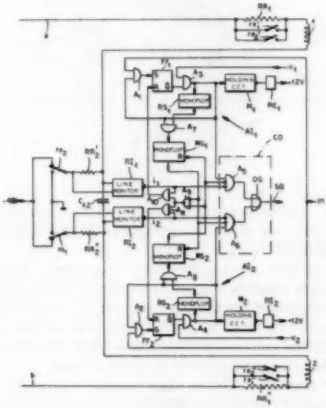
a line transformer having first and second subscriber-side windings respectively in series with said second conductors and further having an exchange-side winding connected across a voice path;

first and second high-ohmic resistors and first and second low-ohmic resistors in said first and second conductors in series with said first and second subscriber-side windings, respectively;

first and second line-monitoring means respectively connected across said first and second low-ohmic resistors;

first and second selection relays respectively connecting said first and second conductors to a source of operating potential in a normal unoperated condition thereof whereby a grounding of either of said conductors by the hook switch of the associated set causes a current flow insufficient to operate the respective line relay but sufficient to be detected by the respective line-monitoring means for the emission of a respective engagement signal;

first and second gating means responsive to first and second scanning pulses from said circuitry, respectively addressed to said first and second conductors, for alternatively passing a first engagement signal from said first line-monitoring means and a second engagement signal from said second line-monitoring means to said circuitry as an indication of an off-hook condition of the respective subscriber set, said scanning pulses being normally generated at a relatively slow recurrence rate but being accelerated by said circuitry to a relatively fast recurrence rate in response to said off-hook condition, such acceleration being accompanied by an assignment of a time slot for communication with said voice path to the set found to be in off-hook condition;



first and second holding means respectively connected between said first and second gating means and said first and second selection relays for respectively operating said selection relays in response to a scanning of the respective engagement signal at said relatively fast rate, operation of said first and second selection relays respectively short-circuiting said first and second high-ohmic resistors with resulting intensification of current flow and operation of said first and second line relays, respectively;

first inhibiting means responsive to an isolation command emitted by said circuitry concurrently with a first scanning pulse for blocking said first gating means in the presence of said first engagement signal and in the absence of activity in a time slot assigned to said first conductor, thereby restoring said first selection relay to its unoperated condition with resulting release of said first line relay; and

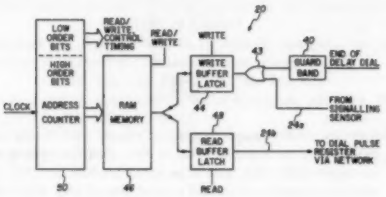
second inhibiting means responsive to an isolation command emitted by said circuitry concurrently with a second scanning pulse for blocking said second gating means in

the presence of said second engagement signal and in the absence of activity in the time slot assigned to said second conductor, thereby restoring said second selection relay to its unoperated condition with resulting release of said second line relay.

4,435,620
DIAL PULSE DELAY CIRCUIT

William A. Fechalos, Naperville, and Carl J. Stehman, La-Grange, both of Ill., assignors to Rockwell International Corporation, Downers Grove, Ill.

Filed Oct. 22, 1981, Ser. No. 313,909
Int. Cl.³ H04M *3/22*; H04Q *1/32*
U.S. Cl. 179—18 EB **12 Claims**



1. A dial pulse delay circuit for use in combination with a common control telephone switching system having a plurality of trunks, a plurality of registers, and a switching network for providing selective connections between said trunks and registers, one register of which is assigned to receive dial pulse information received by way of one of said plurality of trunks, comprising:

means for delaying dial pulse information for a period during which one of said registers is assigned and connected to receive said dial pulse information, a different one of said means for delaying associated with each one of said plurality of trunks;

means for storing said dial pulse information;

means for transferring said stored dial pulse information to the assigned register after its connection to receive said information is effected; and

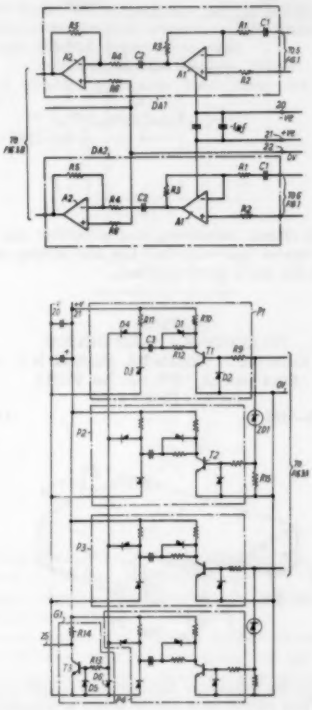
means for sampling for cyclically producing dial pulse information amplitude data at a rate of at least twice the expected dial pulse information rate.

4,435,621
SPEECH DIRECTION DETECTION CIRCUITS FOR TELEPHONE COMMUNICATION DEVICES

Bloomfield J. Warman, 67, King Harold's Way, Bexleyheath, Kent, England

Filed Apr. 30, 1981, Ser. No. 259,273
Claims priority, application United Kingdom, Apr. 30, 1980, 8014263
Int. Cl.³ H04M *9/08*
U.S. Cl. 179—81 B **11 Claims**

1. A speech direction detecting circuit for a telephone communication device, comprising means for detecting a.c. speech signals across two impedances of an impedance network located in a speech transmission path between the output of an amplifier and a telephone line, said impedance network having a configuration such that the said two impedances of said network are effectively connected to present a load both to signals transmitted from the output of said amplifier towards said telephone line and to signals received from said telephone line, in such a manner that voice frequency signals developed across said impedances from the output of said amplifier will be phase displaced relatively to one another so that the respective signals pass through a corresponding reference level of the signal waveform at instants relatively displaced in time whereas voice frequency signals developed across said impedances from the telephone line will pass through the same reference level at the same instants in time, means for generating, in response to excursions of said signals across the reference level, trains of pulses having a duration less than the period of



relative time displacement of said phase displaced signals, and a comparator arranged to compare said respective trains of pulses and to provide an output signal when the pulses of said respective trains overlap in time.

4,435,622
LATCHING RELAY HOLD CIRCUIT FOR A TELEPHONE INSTRUMENT

Gary Grantland, Hartselle, and Eduard F. B. Boeckmann, Huntsville, both of Ala., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 1, 1982, Ser. No. 437,932
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R **9 Claims**

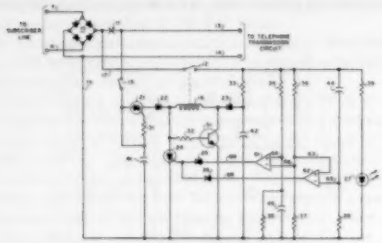
1. A hold circuit for use with a telephone instrument, said telephone instrument connected to a subscriber line and a source of line voltage, said hold circuit comprising:

subscriber line seizing means, including first and second leads arranged to connect across said subscriber line, said first lead including a normally open contact rendering said seizing means normally disconnected from said subscriber line;

line voltage storage means connected across said subscriber line through a normally open hold switch, said hold switch manually closed charging said line voltage storage means to said line voltage; and,

contact activating means connected between said line voltage storage means and said seizing means second lead,

whereby said line voltage storage means discharges through said contact activating means latching said



contact closed, connecting said subscriber line seizing means across said subscriber line and placing said subscriber line into a hold condition.

4,435,623

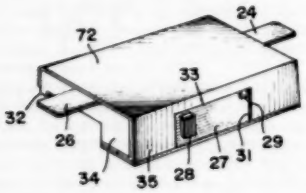
TELEPHONE GUARD DEVICE

Michael J. Valentine, 37 Hillside Rd., Penfield, N.Y. 14526

Filed Nov. 16, 1979, Ser. No. 95,012

Int. Cl.³ H04M *1/66*

U.S. Cl. 179—189 R **11 Claims**



1. A device for selectively maintaining a telephone set having at least one switch hook button which is released when a handset is lifted off its cradle in a first condition to go off hook when the handset is lifted and in a second condition to remain on hook even though the handset is lifted, said device comprising a body having mounting means for retaining said body in fixed position on said telephone adjacent to said cradles, at least one blade slidably mounted in said body and movable laterally between retracted and extended positions out of and into blocking relationship with said switch hook button, and means including a manually actuable slide movably mounted in said body and coupled to said blade for selectively extending and retracting said blade to selectively provide said second and first conditions, respectively.

4,435,624

LOCK OFF-LOCK ON

Luis F. Sepulveda, Fajardo, P.R., assignor to Challenger Caribbean Corporation, Canovanas; Challenger Products Corporation, Rio Piedras, both of, P.R. and Commander Electrical Equipment, Inc., Scarborough, Canada

Filed Sep. 23, 1982, Ser. No. 421,754

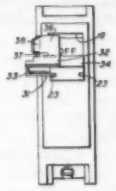
Int. Cl.³ H01H *9/24*

U.S. Cl. 200—42 T **10 Claims**

1. A lock off-lock on for a handle of an electrical circuit breaker, the circuit breaker including a housing comprising a case of suitable insulating material having a slot formed therein including defined opposing edges and an insulative cover for engaging said case, said handle being manually movable and pivotally mounted within said case and extending outwardly from said slot with a dependent arcuate portion of said handle in proximal relationship with the interior of said slot, said handle being adapted for reciprocation about a partial arcuate path between "on" and "off" positions, said handle being adapted to have an opening therethrough in a direction perpendicular to said path, said lock off lock on comprising a unitary member formed from a metallic sheet comprising

a first handle engaging portion adapted to be inserted into said opening of said handle;

a second handle engaging portion, joined to said first portion by a bight to form a U-shaped structure, for engagement with a surface of said handle which is in exposed adjacency to said dependent arcuate portion;



flat spring means coupled to a part of one side of said second portion by an angular bend so that said flat spring means is engageable with said dependent arcuate portion and in abutting relation with said case at one of said edges of said slot; and

a flange, coupled to said flat spring means proximal to said bight, bent outwardly away from said housing so as to facilitate manual removal of said lock off-lock on from said handle.

4,435,625

PNEUMATICALLY OPERABLE SWITCH UNIT FOR MONITORING TIRE PRESSURE

Emil Buchschmid, Rosstal, Fed. Rep. of Germany; Rainer Burkel, Le Chesnay; Jean Danamps, Asnieres, both of France; Anton Frenznick, Nuremberg, and Günther Stradtmann, Ansbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,966

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108998

Int. Cl.³ H01H *35/00*

U.S. Cl. 200—61.22 **7 Claims**

1. A pneumatically operated switch unit for monitoring vehicle tire pressure comprising a metallic conducting switch housing (16) capable of being inserted into a bore in a vehicle tire rim, an electrically conducting membrane (17) with the periphery thereof fastened to said switch housing on the side of said switch housing facing into the tire interior, said membrane closing off a gas-filled reference pressure chamber of said switch housing into which chamber there extends a switch contact insulatedly mounted in said switch housing, by pass-through insulation means, in such a position that it makes contact with said membrane when gas pressure in said chamber is at a reference pressure value and the air pressure in said tire exceeds a predetermined threshold value and is put out of contact with said membrane when the pressure in said tire falls below said threshold value, and circuit elements constituting a resonant circuit with said switch contact when the latter is in

contact with said membrane, said switch unit also incorporating the improvement which comprises the provision of:

a cup-shaped shell (29) of insulating material capable of withstanding temperature changes and gradients, externally threaded for being screwed into said bore in said tire rim with its open end facing the interior space of said tire, and within which said metallic switch housing (16) and said resonant circuit (22,23) are firmly secured, said metallic switch housing (16) electrically connecting said conducting membrane (17) with said resonant circuit elements and being held within said cup-shaped shell (29) in a position in which said metallic switch housing (16) and said conducting membrane (17) do not project beyond said bore into said tire interior.

4,435,626

PRESSURE RESPONSIVE SWITCH ACTUATING MECHANISM

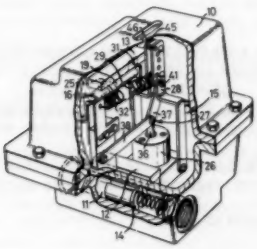
Christopher J. Coffin, Milton, England, assignor to Alan Cobham Engineering Limited, London, England

Filed Mar. 23, 1981, Ser. No. 246,796

Claims priority, application United Kingdom, Mar. 21, 1980, 8009626; Jan. 27, 1981, 8102443

Int. Cl.³ H01H *35/40*

U.S. Cl. 200—81.9 R **17 Claims**



1. A pressure responsive switch actuating mechanism including a movable actuating element which is movable between an inoperative location and an operative location to actuate the switch, and a pressure responsive system including a movable stop against which the movable actuating element is normally urged, the pressure responsive system being operable to control movement of said movable actuating element by controlling location of the movable stop in accordance with the fluid pressure to which said movable stop is subjected, there being a time delay mechanism which operates to delay movement of said movable actuating element following movement of said movable stop in response to certain pressure changes, wherein the improvement comprises a bistable mechanism responsive to pressure of a flow of fluid, said bistable mechanism comprising a movable wall having one side to which the fluid pressure is subjected is subjected, and a plurality of links movable by said movable wall which causes movement of the stop, said mechanism having only two stable conditions and which moves rapidly to either of those stable conditions when displaced from one to the other one, the bistable mechanism including a compression spring which bias said bistable mechanism to one of its two stable conditions so that the pressure responsive system is set in one condition in which it locates said movable stop in one location when the working fluid pressure is within a range bounded by ambient pressure and a predetermined switching pressure even when the fluid pressure is changing and is convertible rapidly to another condition so as to move said movable stop rapidly to another location when the fluid pressure reaches said predetermined switching pressure at which said yieldable biassing means yields whereby said movable actuating element is released for delayed movement into abutment with said movable stop at said other location to actuate said switch.

4,435,627

HIGH TENSION CIRCUIT BREAKER

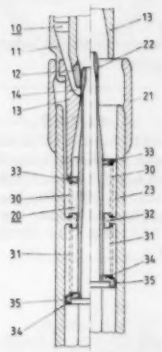
Not-Duri Barth, Oberehrendingen, and Osvin Gaupp, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 13, 1981, Ser. No. 282,597

Claims priority, application Switzerland, Jul. 18, 1980, 5512/80

Int. Cl.³ H01H *33/59*

U.S. Cl. 200—148 R **7 Claims**



1. A high tension circuit breaker comprising:

a stationary first switching mechanism;

a second switching mechanism axially movable in a first axial direction;

a first and second arcing contact operatively connected to said movable switching mechanism and said stationary switching mechanism, respectively, and wherein said first contact normally pressingly engages said second contact;

means for supplying gas under pressure;

nozzle means communicating with said gas supply means formed in said movable switch mechanism and terminating adjacent said first and second contacts for communicating expanded gas from said supply gas to the point of pressing engagement of said first and second contact upon cutting out of said gas supply means wherein said nozzle means comprises insulation material; and

means for shifting said second contact in a second axial direction opposite said first axial direction of movement of said movable switching mechanism upon cutting out of said gas supply means.

4,435,628

SEED HEATING MICROWAVE APPLIANCE

Robert F. Bowen, Burlington; George Freedman; Wesley W. Teich, both of Wayland; Thomas J. Martel, North Reading, and E. Eugene Eves, II, Nabnasset, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 865,824, Dec. 30, 1977, Pat. No. 4,158,760. This application Apr. 11, 1979, Ser. No. 29,227

The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.

Int. Cl.³ H05B *6/80*

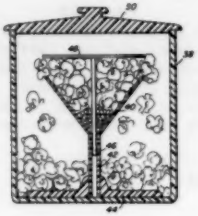
U.S. Cl. 219—10.55 M **15 Claims**

1. The method of popping kernels using microwave energy, comprising the steps of:

bunching said kernels together in a clump;

radiating said clump with microwave energy; and

directing unpopped kernels displaced from said clump back to the region of said clump while continuing to radiate said microwave energy until a substantial portion of said kernels are popped.

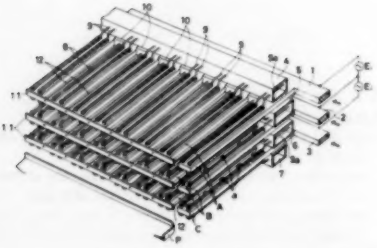


4,435,629

COMBINATION HEATING APPARATUS

Kimio Ishimaru, Osaka, and Kenichi Abe, Omiya, both of Japan, assignors to Osaka Gas Co., Ltd., Osaka, Japan

Filed Aug. 17, 1981, Ser. No. 293,310
Claims priority, application Japan, Aug. 22, 1980, 55-114819
Int. Cl.³ F26B *3/34*; H05B *6/64*
U.S. Cl. 219—10.55 A **5 Claims**



1. A heating apparatus comprising a microwave heating means having microwave leakage-type waveguides, each waveguide having a plurality of microwave emitting openings extending along the advancing direction of microwave radiation, said waveguides being disposed in parallel with one another; radiation heating means having heat conducting members disposed along upper and lower surfaces of the microwave leakage-type waveguides; and high frequency heating means utilizing said microwave leakage-type waveguides as electrodes.

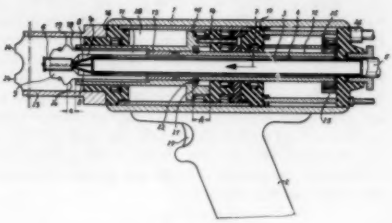
4,435,630

STUD WELDING APPARATUS

Ernst G. Jordan, Menden, Fed. Rep. of Germany, assignor to Firma Obo Bettermann OHG, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,065
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014583
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—98 **22 Claims**

1. A stud welding apparatus comprising an elongated housing, tubular member extending axially therethrough to form a stud inlet having a bore and which tubular member is fastened at one end in the housing at which end is fastened a stud feed means, tongues fastened at the other end of the tubular member and tapering toward each other under spring tension, a stud clamping sleeve behind the tongues and having a tubular shank portion forming a stud delivery passage disengageably connected to a tube in a space in the housing adjacent the stud feed means, and means for feeding a succession of studs through the stud delivery passage.

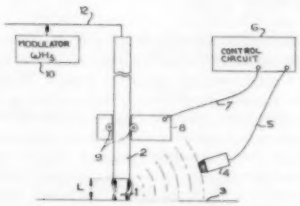


4,435,631

METHOD AND DEVICE FOR CONTROLLING THE LENGTH OF AN ELECTRICAL ARC IN AN ARC GENERATING MACHINE

Michel G. Drouet, St-Bruno, and Francois Nadeau, Montreal, both of Canada, assignors to Hydro Quebec, Montreal, Canada

Filed Dec. 15, 1981, Ser. No. 331,242
Claims priority, application Canada, May 19, 1981, 377808
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—124.02 **14 Claims**



1. A method for controlling the length of an electrical arc generated in an arc generating machine, comprising the steps of:

a. detecting an acoustical signal generated by the electrical arc of said arc generating machine, said acoustical signal being directly proportional to the actual length of the arc and generating an electrical output signal in response to said detected signal:

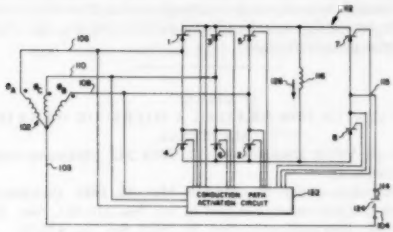
b. subtracting from the amplitude of said electrical output signal a reference amplitude corresponding to the level of sound of a desired arc length, thereby producing an electrical difference signal proportional to the difference between the actual length and the desired length of the arc, said difference signal being positive if the arc is too long and negative if the arc is too short; and

c. adjusting the length of said electrical arc by increasing said length if the difference signal is negative and reducing said length if the difference signal is positive until the difference signal is zero.

4,435,632
THREE PHASE SQUARE WAVE WELDING POWER SUPPLY

Robert L. Risberg, New Berlin, Wis., assignor to Hobart Brothers Company, Troy, Ohio

Filed Feb. 12, 1982, Ser. No. 348,531
Int. Cl.³ B23K 9/09
U.S. Cl. 219—130.51 15 Claims



1. A controllable current supply for generating an alternating polarity square wave current for a welding arc comprising:

a power input for receiving three phase alternating current power;

a power control circuit connected in series with said power input and said welding arc, said power control circuit comprising:

three straight polarity conducting paths each comprising a phase related unidirectional input switching device connected to the corresponding phase of said power input, a common unidirectional output switching device connected to said arc and common inductor means connected between said input switching device and said output switching device of each of said straight polarity paths; and

three reverse polarity conducting paths each comprising a phase related unidirectional input switching device connected to the corresponding phase of said power input and a common unidirectional output switching device connected to said arc, said inductor means also being common to said reverse polarity conducting paths and connected between said input switching device and said output switching device of each of said reverse polarity paths such that current flow is in the same direction through said inductor means whether a straight polarity conducting path is active or a reverse polarity conducting path is active;

path switching means synchronized with three phase power received on said power input for controlling said power control circuit to activate said conducting paths at defined non-zero voltage points of said three phase power; and

timing means synchronized with three phase power received on said power input for enabling said path switching means to activate said conducting paths to conduct repetitive sequences of independent numbers of half cycles of each polarity of said three phase power.

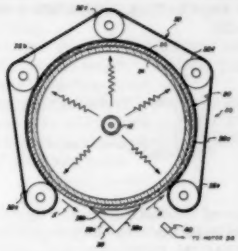
4,435,633
FLASH FUSING APPARATUS

Walter A. Stryjewski, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,961
Int. Cl.³ H05B 3/02, 1/00
U.S. Cl. 219—216 8 Claims

1. In apparatus for fusing images formed of pigmented thermoplastic resin marking particles to a receiver member, such apparatus including a hollow member for contacting on its peripheral surface a marking particle image on the surface of such receiver member and a source of radiant energy, capable of at least partially melting such particles, mounted within said hollow member, said hollow member being substantially transparent to the energy of said source, the improvement comprising:

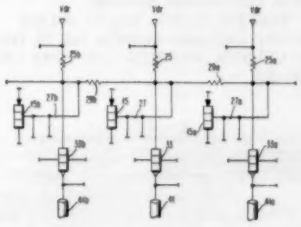
means, effective during radiation of energy by said source, for simultaneously pressing the entire image-bearing surface of a receiver member into full and intimate contact with said peripheral surface of said hollow member to lower the particle/receiver member boundary thermal resistance and enhance particle flow during fusing of the image to said receiver member.



4,435,634
THERMAL PRINTER EDGE COMPENSATION

Frank J. Horlander, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,347
Int. Cl.³ B41J 3/20; H05B 3/00
U.S. Cl. 219—216 24 Claims



1. Circuitry for driving electrodes in selected combinations comprising:

a plurality of said electrodes positioned side-by-side;

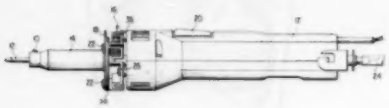
separate, current-drive circuits, each connected to drive one of said electrodes, each said current-drive circuit having one point connected to carry a first voltage, a first resistance element, and a second point, said resistance element being connected across said first point and said second point, said second point being driven to a second voltage and being connected to drive a first electrode when said current-drive circuit is selected and being isolated from voltages other than said first voltage and disconnected from said first electrode when said current-drive circuit is not selected, and

a second resistance element connected across the second point of one of said current-drive circuits and the second point of a second current-drive circuit which drives an electrode contiguous to the electrode driven by said one current-drive circuit.

4,435,635
HEAT BARRIER FOR DESOLDERER AND HEATER ASSEMBLY

Oscar E. Parker, Glen Burnie, Md., assignor to Pace Incorporated, Laurel, Md.

Filed Apr. 6, 1982, Ser. No. 366,002
Int. Cl.³ B23K *3/02*; H05B *3/06*
U.S. Cl. 219—227 **5 Claims**



1. An improved thermal barrier for rigidly connecting an elongate heater assembly with an elongate handle assembly, each assembly having a longitudinal axis which is substantially coincident with the axis of the other assembly, said heater assembly including a generally circular mounting plate and said handle assembly including spacers thereon, said thermal barrier comprising:

a plurality of slotted spacer portions, equiangularly disposed around said longitudinal axis, comprising a means for connecting said thermal barrier to said mounting plate;

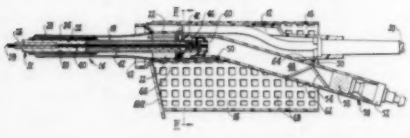
a plurality of generally arcuate, coplanar mounting sections, equiangularly disposed around said longitudinal axis and axially displaced from said mounting plate comprising a means for connecting said thermal barrier to said handle assembly spacers; and

means, connecting each of said spacer portions to an adjacent mounting section, for defining an indirect conduction path between each of said connecting means.

4,435,636
DESOLDERING TOOL

Alan L. Royston, Canterbury, Australia, assignor to Royel International Pty. Ltd., Victoria, Australia

Filed Feb. 22, 1982, Ser. No. 351,305
Claims priority, application Australia, Feb. 23, 1981, PE7718
Int. Cl.³ B23K *3/04*; B25G *1/10*; H05B *1/00*
U.S. Cl. 219—230 **12 Claims**

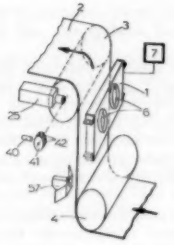


1. A desoldering tool having an elongate handle; an elongate housing defining a bore therethrough, and extending from one end of the handle; a collecting chamber having at least an inlet portion thereof within the handle, which portion defines an inlet to the chamber; a heating bit assembly having a hollow heating bit, and a bit holder; and a connector associated with said chamber for connecting the tool to means for developing suction in the chamber; the holder having a body portion, around which is provided an electric heating element connectable to a source of electric current for heating the body portion and bit, and an elongate tubular portion; the holder being mounted longitudinally in the bore of the housing with its body portion adjacent the end of said bore remote from the handle and with the tubular portion terminating in the chamber inlet, and the holder defining a longitudinal passage therethrough with the bit received in the end of the passage at said remote end of the housing so that the bit is in communication with the chamber; the tubular portion of the bit holder being of lesser wall thickness than the body portion, and the holder further including an imperforate sleeve through which the tubular portion extends and which has one end mounted on the body portion and its other end extending into the chamber inlet so as to enclose, and to define around the tubular portion, an insulating air space extending along the length of the tubular portion; said lesser wall thickness of the tubular portion and the air space enabling substantially the full length of the tubular portion to be maintained at a temperature above the liquidus temperature for solder melted by the bit during a desoldering operation, which heat loss from the body portion to the tubular portion such as to impair desoldering, so that the melted solder can be drawn through the tubular portion and into the chamber prior to solidification.

4,435,637
APPARATUS FOR HEATING A SHEET- OR WEB-LIKE MATERIAL

Jacob de Vries, Insulindeweg 10, 1462 MJ Middenbeemster, Netherlands

Continuation of Ser. No. 244,510, Mar. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 210,382, Nov. 26, 1980. This application Sep. 30, 1982, Ser. No. 428,551
Claims priority, application Netherlands, Apr. 2, 1980, 8001944
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—358 **7 Claims**



1. Apparatus for heating a sheet- or web-like material during its transport through a processing machine, comprising at least one infrared heating panel facing the path of transport of the material and connected to an ac-source through a semiconductor switching means, a controlling circuit for delivering ignition impulses to the semiconductor switching means, wherein the ignition time within each half period of the supply voltage is determined by a control signal provided by a control means to the controlling circuit, which can be switched on and off by a monitoring circuit coupled to a detector means reacting to the transport speed, wherein said monitoring circuit comprises two or more zone detector means reacting to the presence of the material within a given zone extending transversely to the transport direction of the material on either side of the desired path of transport, and an AND-input circuit and/or an OR-input circuit, said input circuits controlling a switching means through a time-delay means for switching the controlling circuit on and off, wherein the controlling circuit is switched off if the material leaves said zone.

4,435,638
ELECTRIC RANGE SURFACE ELEMENT

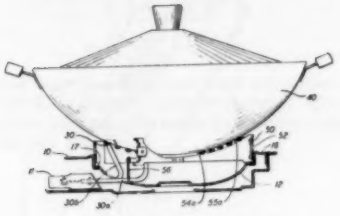
Donald J. Simon, Indianapolis, and Thomas R. Field, Noblesville, both of Ind., assignors to Jenn-Air Corporation, Indianapolis, Ind.

Filed Aug. 20, 1981, Ser. No. 294,582
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—460 **7 Claims**

1. In an electric range or the like having a top cooking surface defining an opening having ledge means therein, an electric surface unit for heating a utensil having a large convex bottom surface by conduction comprising:

support means supported by said ledge means and having an elevated support surface disposed substantially above said top surface and including a generally spherical portion;

heating element means formed in a spiral pattern to a generally spherical radius and adapted to be supported in a generally predetermined non-deformable posture on said elevated support surface, said support means positioning the underside of said heating element means spaced vertically above said top surface for permitting a cooling cross flow of air therebetween, said heating element means being operable for providing a heat conducting relationship with a complementary configured utensil when in an



operative condition and for being supported by said support means with the large convex bottom surface extending radially beyond the limits of said heating element means; and

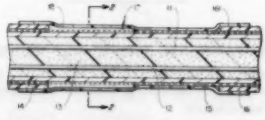
a perforate element generally enclosing said heating element means and the vertical space between said heating element means and said top surface, said perforate element permitting airflow into and out of said air space while effectively shielding the adjacent top surfaces from radiation heating whereby when said heating element means is in an operative condition heat is provided for said utensil while heating of the subjacent top surface is inhibited.

4,435,639

ELECTRICAL DEVICES WITH WATER-BLOCKING INSULATION

Boris Gurevich, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 15, 1982, Ser. No. 418,354
Int. Cl.³ H05B *3/56*
U.S. Cl. 219—544 **7 Claims**



1. An elongated heater which comprises:

(a) an elongate electrical heating element;

(b) an inner waterproof electrically insulating jacket surrounding the electrical element; and

(c) an outer waterproof electrically insulating jacket surrounding but spaced apart from the inner jacket so that water entering the space between the jackets can wick along the heater between the jackets,

the heater comprising, at at least one intermediate point along its length, a water-blocking section through which the electrical element and the inner jacket pass without interruption but in which the outer jacket has been removed to provide an exposed length of the inner jacket, said water-blocking section further comprising

(d) a waterproof electrically insulating sleeve which surrounds the exposed length of the inner jacket and the ends of the outer insulating jacket, and

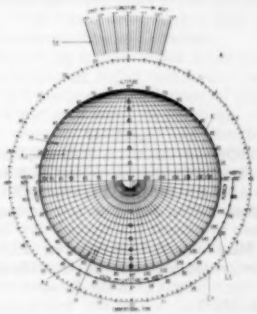
(e) a sealing material which secures the sleeve around the inner and outer jackets and provides a waterproof seal between the sleeve and around part only of the exposed length of the inner jacket.

4,435,640

MULTIFUNCTIONAL INSTRUMENT FOR DETERMINING THE POSITION AND COURSE OF THE SUN, THE INCLINATION FOR MAXIMAL INSOLATION OF A PLANE AND THE CORRESPONDENCE FROM SOLAR AND CONVENTIONAL TIME

Renato Micheletto, Via Asiago 34, Conegliano, Italy

Filed Mar. 25, 1982, Ser. No. 361,962
Claims priority, application Italy, Apr. 21, 1981, 35763/81[U]
Int. Cl.³ G06C *3/00*
U.S. Cl. 235—78 M **7 Claims**



1. An instrument for determining the position and course of the sun, the inclination for maximum insolation of a planar surface, and the relationship between solar time and conventional time, said instrument comprising:

a fixed first planar member having a center and a surface having thereon, concentrically with respect to said center:

a circle;

a straight line passing through said center and dividing said circle into first and second semicircles, said straight line being representative of the horizon;

said first semicircle having therein plural straight lines parallel to said horizon and representative of angular altitude therefrom, and plural elliptical lines intersecting said plural straight lines and representative of angular azimuth along said horizon;

said second semicircle having therein an orthogonal projection of said plural straight lines and said plural elliptical lines;

along a semicircumference outwardly of said second semicircle, indicia representative of south and north latitude values;

along a ring outwardly of said circle, indicia representative of conventional daily time; and

along a segment of said ring, indicia representative of east-west longitude values;

a pivotable, transparent second planar member having a center and a surface having thereon:

a straight line passing through said center of said second planar member and forming a median line representative of the 6AM–6PM time period;

plural straight lines parallel to said median line and representative of the equinoxes, the solstices and days of the year therebetween; and

plural curved lines concentric to said center of said second planar member and intersecting said plural straight lines thereof, said plural curved lines being representative of solar times of the day;

a pivotable, transparent third planar member having a center and a surface having thereon:

a ring having therearound indicia the same as said indicia along said ring on said surface of said first planar member and representative of solar time; and

at a position outwardly of said ring, a curve representative of the time egation during the course of the year; and

said first, second and third planar members being assembled for relative coaxial rotation about said respective centers, with said second planar member being positioned between and in contact with said first and third planar surfaces.

4,435,641

INSPECTION APPARATUS FOR INSPECTING AN OBJECT TO DETERMINE WHETHER OR NOT IT CONTAINS AN ABNORMALITY, DEFECT OR THE LIKE

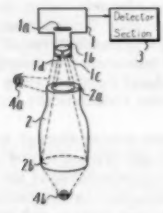
Yoshida Hajime, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Filed May 20, 1981, Ser. No. 265,652

Claims priority, application Japan, Oct. 15, 1980, 55-144046

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—223 B **8 Claims**



1. An inspection apparatus for inspecting an object to determine whether or not it contains an abnormality, defect or the like, comprising:

(a) a photo-sensor having a target screen, receiving an image of a portion of the object to be inspected and producing a corresponding electrical signal; and

(b) a detector section receiving the electrical signal from said photo-sensor to determine whether or not said object contains abnormalities defects or the like, said photo-sensor having an optical lens arrangement which can simultaneously focus images of at least two different portions of said object disposed at different distances from said optical lens arrangement on first and second separate portions of said target screen of said photo-sensor.

4,435,642

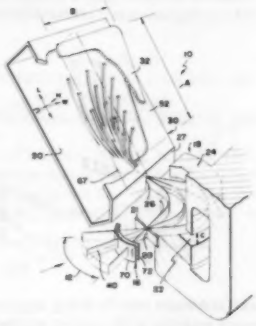
ION MASS SPECTROMETER

Marcia M. Neugebauer, Altadena; Douglas R. Clay, La Crescenta; Bruce E. Goldstein, Pasadena, and Raymond Goldstein, Monrovia, all of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1982, Ser. No. 361,216

Int. Cl.³ B01D *59/48;* **H01J** *49/26*

U.S. Cl. 250—296 **6 Claims**



1. An ion mass spectrometer apparatus comprising;

a magnetic analyzer which includes entrance and exit openings, and a sector magnet that passes ions of selected momentum characteristics along a wide range of paths that extend between the openings while preserving the angle of their velocity vector with respect to a centerline of said path, at said openings; and

an electrostatic analyzer located downpath of said magnetic analyzer exit opening and positioned to receive ions leaving therefrom, said analyzer including walls forming a chamber having width, length, and height dimensions, said analyzer also having means for applying an electrical potential that deflects ions moving largely lengthwise of the chamber, along the height dimension in accordance with at least the mass to charge ratio of the ion;

said electrostatic analyzer also including an ion sensor which senses ions along a wall of said chamber, said sensor constructed to detect the position of an ion along the width dimension of the chamber as well as along another dimension.

4,435,643

GAMMANETRIC THICKNESS MEASURING APPARATUS

Guy Junck, Esch, Luxembourg, assignor to Arbed S. A., Luxembourg, Luxembourg

Filed Jan. 21, 1982, Ser. No. 341,231

Claims priority, application Luxembourg, Jan. 23, 1981, 83083

Int. Cl.³ G01M *23/00*

U.S. Cl. 250—358.1 **6 Claims**

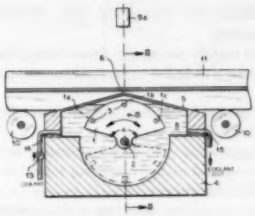
1. An apparatus for the gammametric measurement of an article, comprising:

a block rotatable about an axis and having a center of gravity offset therefrom while being provided along its periphery with a plurality of spaced apart radiation sources;

a radiation-absorbing body formed with a trough adapted to receive said block;

means connected to said block for swinging same from an inoperative position wherein said radiation sources are disposed within said trough into an operative position wherein said radiation sources are disposed at a location remote from the bottom of said trough;

a cover mounted on said body and enclosing said block in the operative position thereof, said cover having at least one window alignable with said radiation sources selectively; and



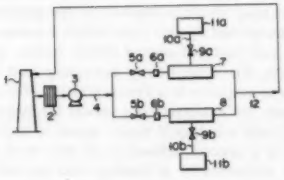
a radiation detector spaced from said cover and aligned with said window for detecting radiation traversing said window and passing through an article disposed between said cover and said detector.

4,435,644

RADIOACTIVE EFFLUENT GAS MONITORING APPARATUS

Hideaki Heki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 13, 1981, Ser. No. 283,105
Int. Cl.³ G01N *21/01*
U.S. Cl. 250—435 **11 Claims**



1. A radioactive effluent gas monitoring apparatus for detecting radioactive nuclides contained in radioactive effluent gas from a nuclear facility, comprising:

a guide line for discharging effluent gas from the nuclear facility;

a water recovery section for recovering ^{3}H in the effluent gas in the form of H_2O;

carbon dioxide recovery section connected parallel to said water recovery section and recovering ^{14}C in the effluent gas in the form of CO_2;

branch lines for separately feeding the effluent gas from said guide line to said water recovery section and said carbon dioxide recovery section;

a line for joining output gases from said water recovery section and said carbon dioxide recovery section to return the joined gas to the nuclear facility; and

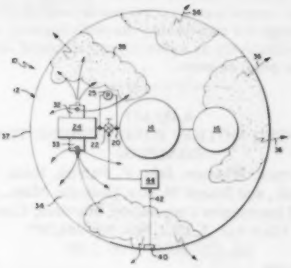
detecting means for detecting radioactivities in the recovered H_2O and CO_2.

4,435,645

INFRARED RADIATION SIGNATURE GENERATION SYSTEM

Richard S. Bartle, Andover, Mass., assignor to Avco Corporation, Wilmington, Mass.

Filed May 14, 1982, Ser. No. 378,061
Int. Cl.³ G21G *4/00*
U.S. Cl. 250—493.1 **12 Claims**



1. Infrared radiation signature generation system comprising:

means defining an enclosed chamber,

means for generating a hot vapor at selected rates, the temperature of the vapor being greater than the ambient temperature surrounding said chamber,

means for distributing said hot vapor to the interior of said chamber at a pressure higher than ambient pressure,

the wall of said chamber being formed of material which allows percolation of vapor therethrough, said percolating vapor transferring heat to said chamber wall and causing a temperature rise therein whereby said chamber wall emits an infrared radiation signature in response to such temperature rise,

temperature transducer feedback means interrelated with the wall of said chamber and responsive to the temperature thereof for generating a signal whose amplitude varies in relation to such temperature, and

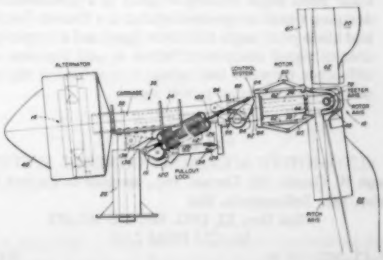
rate controller means responsive to said signal for controlling the generation rate of hot vapor to maintain said chamber wall at a steady state temperature whereby a continuous infrared radiation signature is generated.

4,435,646

WIND TURBINE ROTOR CONTROL SYSTEM

Clint Coleman, Warren, Vt., and Hugh D. Currin, Klamath Falls, Oreg., assignors to North Wind Power Company, Inc., Waitsfield, Vt.

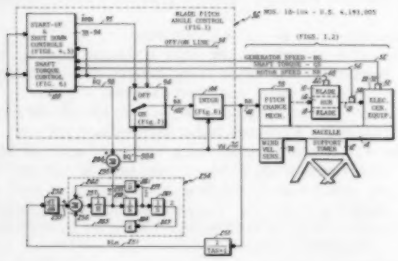
Filed Feb. 24, 1982, Ser. No. 351,896
Int. Cl.³ F03D *7/04*
U.S. Cl. 290—44 **16 Claims**



1. A constant speed wind turbine of the type comprising

a tower-mounted free yawing carriage having vane means for aligning said carriage with the wind,
a drive shaft defining a substantially horizontal rotor axis mounted for rotation in said carriage, and
a wind-powered electrical generator operatively coupled to one end of said drive shaft having electrical terminals adapted to be connected to an electrical power grid, wherein the improvement comprises
a rotor with variable pitch blades drivingly coupled coaxially to the other end of said drive shaft, and
mechanical control means connected between said rotor and said carriage for establishing the pitch angle of said rotor blades collectively as a direct predetermined function of the blade pitch moment.

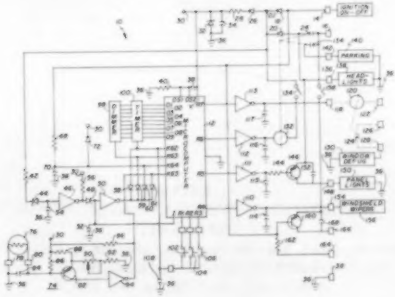
4,435,647
PREDICTED MOTION WIND TURBINE TOWER DAMPING
Kermit I. Harner, Windsor; John P. Patrick, South Windsor, both of Conn., and Joseph M. Kos, Holyoke, Mass., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 2, 1982, Ser. No. 364,707
Int. Cl.³ F03D *9/00, 7/04*
U.S. Cl. 290—44 **3 Claims**



1. A wind turbine system for generating electric power, comprising:
a tower;
a rotor disposed on said tower including blades disposed for rotation about an axis and a blade pitch angle change mechanism;
means for providing an actual torque/power signal indicative of actual torque/power generated by said wind turbine system; and
signal processing means for providing a reference torque/power signal indicative of desired generated torque/power, and for providing a blade pitch angle reference signal as a function of the difference between said actual torque/power signal and said reference torque/power signal;
characterized by:
said signal processing comprising means for providing said blade pitch angle reference signal as a combination of a damping signal component related to a filtered function of said blade pitch angle reference signal and a torque/power control signal component which is said function of the difference between said actual torque/power signal and said reference torque/power signal.

4,435,648
AUTOMOTIVE ACCESSORY CONTROL SYSTEM
Joseph W. Goode, III, Carmel, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Filed Dec. 22, 1982, Ser. No. 452,071
Int. Cl.³ H02J *1/00*
U.S. Cl. 307—10 R **5 Claims**

1. An automotive accessory control system for a vehicle having an on-off switch, exterior lighting means, windshield wiper means, electrical window defogger means and instrument panel lighting means, comprising:
first relay means for energizing said exterior lighting means;
second relay means for energizing said windshield wiper means;
third relay means for energizing said electrical window defogger means;
semiconductor switch means for determining the amount of electrical energy coupled to said instrument panel lighting means;
light detector means for monitoring ambient light conditions around said vehicle;
first switch means for selecting automatic activation and deactivation of said exterior lighting means in response to said light detector means;
second switch means for selecting a delay period for said automatic activation and deactivation of said exterior lighting means;
third switch means for selecting intermittent operation of said windshield wiper means;
fourth switch means for selecting operation of said window defogger means;

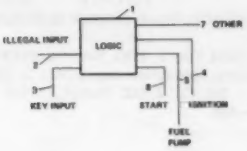


fifth switch means for selecting a brightness level for said instrument panel lighting means; and
microcomputer control means for activating and deactivating said first relay means in response to the ambient light conditions monitored by said light detector means and in response to said first and second switch means, and said on-off switch, for momentarily activating said second relay means in response to a first activation of said third switch means, for determining a period for intermittent operation of said windshield wiper means in response to said first and a second activation of said third switch means, for momentarily activating said second relay means periodically in accordance with said period for intermittent operation, for activating said third relay means for a predetermined period of time in response to activation of said fourth switch means, and for activating said semiconductor switch means to determine the amount of electrical energy coupled to said instrument panel lighting means in response to the brightness level selected by said fifth switch means.

4,435,649
AUTOMOTIVE CONTROL CIRCUIT
John F. Vandigriff, Box 179, Mansfield, Tex. 76063
Filed Dec. 7, 1981, Ser. No. 328,031
Int. Cl.³ B60R *25/04*
U.S. Cl. 307—10 AT **4 Claims**

1. An antitheft circuit for detecting nonstandard connections to an automobile electrical system comprising, means including a key circuit for supplying power and control signals to the electrical system, a logic circuit, said logic circuit upon receipt

of said control signals enabling the electrical system of the automobile, and a circuit for disabling the electrical system



upon detecting nonstandard connections to the electrical system when the logic circuit is not in receipt of control signals.

4,435,650

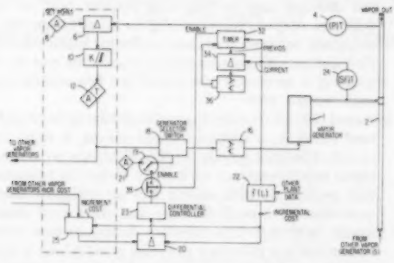
LOAD CONTROL FOR ENERGY CONVERTERS

Donald J. Dziubakowski, Seven Hills; Azmi Kaya, Akron; Marion A. Keyes, Chagrin Falls; Theodore N. Matsko, Chesterland; William H. Moss, Willoughby, and Thomas J. Scheib, Chesterland, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 15, 1981, Ser. No. 331,060

Int. Cl.³ H02J *3/00*

U.S. Cl. 307—32 **3 Claims**



1. A load control for a system comprised of a plurality of energy converters, comprising, means generating a system control signal corresponding to the system load for adjusting in parallel the energy output of each of said converters in accordance with changes in the system control signal, means producing an individual incremental cost signal for each of said plurality of converters, means responsive to all of said incremental cost signals generating a system incremental cost signal, means generating a third signal for each of said generators corresponding to the difference between the system incremental cost signal and the individual incremental cost signal for each generator, means under the control of the third signal biasing the energy output of each converter as required to maintain a predetermined relationship between the system incremental cost signal and the individual incremental cost signal and means inhibiting said third signal from biasing the output of a converter, if during predetermined periods of time, the rate of energy output of said one converter fluctuates beyond predetermined limits.

4,435,651

ZERO VOLTAGE SWITCH

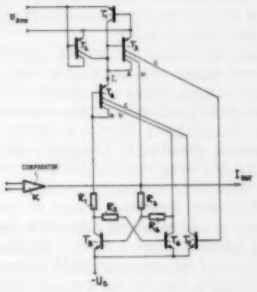
Karl-Diether Nutz, Oedheim, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,516

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037794

Int. Cl.³ H03K *17/72, 17/13, 5/153*

U.S. Cl. 307—252 UA **11 Claims**



1. A zero voltage switch connected to an AC voltage source which produces an AC voltage, said switch comprising a DC current source producing a DC current, first and second parallel connected current branches connected to said DC current source and the AC voltage source for taking over the DC current from said DC current source in half cycles of the AC voltage, a third current branch connected to said first and second parallel connected branches and said DC current source for blocking said first and second current branches in zero axis crossing phases of the AC voltage to produce control pulses and a logic unit connected to said DC current source for controlling said DC current source to provide an extremely small current up to the beginning of a first control pulse, an increased current during said control pulses and a current between said extremely small current and said increased current between the control pulses.

4,435,652

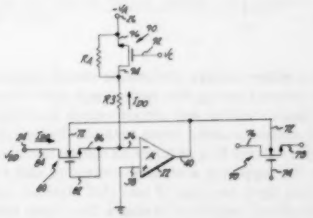
THRESHOLD VOLTAGE CONTROL NETWORK FOR INTEGRATED CIRCUIT FIELD-EFFECT TRRANSISTORS

Emsley H. Stevens, Plymouth, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed May 26, 1981, Ser. No. 267,213

Int. Cl.³ H03K *17/693, 17/30*

U.S. Cl. 307—297 **6 Claims**



1. A threshold voltage control circuit for controlling threshold voltages of selected field-effect transistors formed as part of an integrated circuit and having respective drains, sources and gates thereof electrically interconnected in said integrated

circuit in any desired manner including a first field-effect transistor, said threshold voltage control circuit comprising:

a reference field-effect transistor formed as part of said integrated circuit having a drain, a source and a first gate with said first gate and source electrically connected together, with said reference field-effect transistor being electrically connected to said first field-effect transistor such that said reference field-effect transistor has a threshold voltage which determines that threshold voltage associated with said first field-effect transistor, said reference field-effect transistor drain being electrically connected to a first terminal means characterized as being connectible to a first voltage source;

an impedance means electrically connected to a second terminal means characterized as being connectible to a second voltage source and electrically connected to said reference field-effect transistor source wherein said impedance means has a first or a second impedance value depending on values of a control signal; and

means for providing threshold voltage control to said reference field-effect transistor depending on impedance values taken by said impedance means to cause said threshold voltage of said reference field-effect transistor to attain a value which maintains current flowing between source and drain of said reference field-effect transistor substantially equal to that flowing through said impedance means, said threshold voltage of said reference field-effect transistor having a first value when said impedance means has said first impedance value and having a second value when said impedance means has said second impedance value.

4,435,653

IN-PHASE VOLTAGE ELIMINATION CIRCUIT FOR HALL ELEMENT

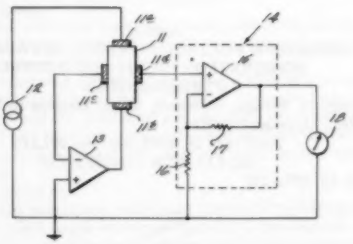
Kunihiko Matui, Komukainishi, and Shikei Tanaka, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 6, 1981, Ser. No. 318,852

Claims priority, application Japan, Nov. 26, 1980, 55-166409; Apr. 15, 1981, 56-56714

Int. Cl.³ H03K *17/60, 7/10*

U.S. Cl. 307—309 **11 Claims**



1. An in-phase voltage elimination circuit comprising:

a Hall element having first and second control current input terminals and first and second output terminals, said second control current input terminal being connected to neither of said first and second output terminals;

means for supplying a control current to said first control current input terminal of said Hall element; and

an operational amplifier having a first input terminal connected to reference potential, a second input terminal connected to said first input terminal of said Hall element, and an output terminal connected to second control current input terminal of said Hall element; wherein said Hall element produces a Hall output at said second output terminal of said Hall element.

4,435,654

OUTPUT LEVEL ADJUSTMENT MEANS FOR LOW FANOUT ECL LACKING EMITTER FOLLOWER OUTPUT

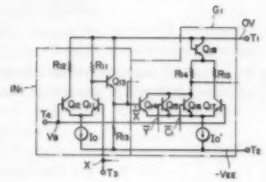
Kazuo Koide, Fuchu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,470

Claims priority, application Japan, May 2, 1980, 55-57814

Int. Cl.³ H03K *19/086, 19/092*

U.S. Cl. 307—455 **7 Claims**



1. A complex logic circuit comprising a plurality of emitter coupled logic circuits commonly connected to a reference potential for comparing with input signals respectively received by said emitter coupled logic circuits, said complex logic circuit comprising:

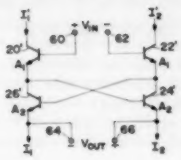
a first emitter coupled logic circuit having first and second load resistors, a first current source, a first current switch transistor having its base electrode connected to a signal input terminal, its emitter electrode connected to said first current source and its collector electrode connected to a point of operation potential through said first load resistor, a second current switch transistor having its base electrode connected to a reference potential point which is supplied with said reference potential, its emitter electrode connected to said first current source and its collector electrode connected to said point of operation potential through said second load resistor, and an emitter follower output circuit having its input connected to an electrode selected from said collector electrodes of said first and second current switch transistors and its output coupled to an output terminal of said first emitter coupled logic circuit, and

a second emitter coupled logic circuit having third and forth load resistors, a second current source, a third current switch transistor having its base electrode connected to a signal input terminal, its emitter electrode connected to said second current source and its collector electrode connected to a node through said third load resistor, a fourth current switch transistor having its base electrode connected to a reference potential point which is supplied with the same reference potential as that supplied to the reference potential point of said second current switch transistor, its emitter electrode connected to said second current source and its collector electrode connected to said node through said fourth load resistor and a level shift element which is connected between said point of operation potential and said node, wherein at least one collector electrode of said third and fourth current switch transistors is connected to an output terminal of said second emitter coupled logic circuit, and wherein the voltage drop across said level shift element is set to be substantially equal to a voltage across the base and emitter of an emitter follower output transistor of said emitter follower output circuit so that said first and second emitter coupled logic circuits can operate using the same reference potential for comparison with their respective input signals and so that said output signals at said output terminals of said first and second emitter coupled logic circuits have substantially identical voltage levels for high and low level output signals provided at said respective output terminals.

4,435,655
LOG-CONFORMANCE ERROR CORRECTION CIRCUIT FOR SEMICONDUCTOR DEVICES

Max W. Hauser, Cambridge, Mass., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 18, 1981, Ser. No. 264,366
Int. Cl.³ G06G 7/12
U.S. Cl. 307—490 4 Claims



1. A circuit for correcting log-conformance error in a prototype circuit which includes semiconductor junctions, comprising:

a first pair of semiconductor devices; and

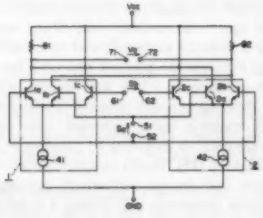
a second pair of semiconductor devices operatively associated with said first pair of semiconductor devices such that the current densities of said second pair are cross-proportional with the current densities of said first pair and of a different magnitude;

wherein signal-dependent current derived from said prototype circuit flows through said first and second pairs of semiconductor devices and a correction voltage is generated thereby for correcting said log-conformance error.

4,435,656
PHASE INVERTER CIRCUIT

Yasuta Tomuro, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,874
Claims priority, application Japan, Mar. 23, 1981, 56-42788
Int. Cl.³ H03L 7/00; H03F 3/45
U.S. Cl. 307—513 5 Claims



1. A phase inverter circuit, comprising:

a first differential current gate including first, second and third active elements and a first constant current source;

a second differential current gate including fourth, fifth and sixth active elements and a second constant current source;

a first output terminal connected to the output terminals of said first and fourth active elements;

a second output terminal connected to the output terminals of said second and fifth active elements;

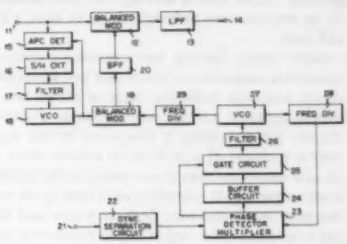
a first input terminal connected to the input terminals of said first and fifth active elements; and

a second input terminal connected to the input terminals of said second and fourth active elements, an input signal being applied across said first and second input terminals, and a phase switching signal being applied across input terminals of said third and sixth active elements.

4,435,657
PHASE DETECTOR CIRCUIT

Shinichiro Taguchi; Nobuya Nagao, and Yutaka Ogihara, all of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 27, 1981, Ser. No. 238,951
Int. Cl.³ H03D 13/00; G01R 25/00
U.S. Cl. 307—516 3 Claims



1. A phase detector circuit comprising:

a phase detector including a first differential amplifier and a second differential amplifier, a reference pulse signal and a comparison pulse signal being applied to first input terminals of said respective first and second differential amplifiers, preset bias voltages of first and second DC bias voltage sources being applied to second input terminals of said respective first and second differential amplifiers, said second differential amplifier providing from an output terminal thereof a phase detection pulse of a pulse width proportional to the phase difference between the reference pulse and comparison pulse,

a buffer circuit connected to the output terminal of said second differential amplifier, for extracting said phase detection pulse output,

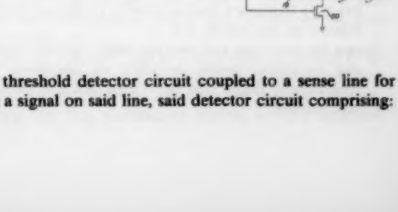
a gate circuit connected to an output terminal of said buffer circuit, a current path of said buffer circuit between a phase detection pulse input terminal and an output terminal being controlled to on or off by said reference pulse signal, said buffer circuit providing an output pulse while said current path is in the "on" state, the pulse duty of said output pulse varying according to the pulse width of said phase detection pulse, and

a filter for receiving the output of said gate circuit.

4,435,658
TWO-LEVEL THRESHOLD CIRCUITRY FOR LARGE SCALE INTEGRATED CIRCUIT MEMORIES

Lance R. Murray, and Ta-Ming Wu, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1981, Ser. No. 235,040
Int. Cl.³ G01R 19/165; H03K 5/24, 19/017
U.S. Cl. 307—530 8 Claims



1. A threshold detector circuit coupled to a sense line for sensing a signal on said line, said detector circuit comprising:

a low threshold detector means having an input terminal coupled to said sense line and having an output terminal;

a high threshold detector means having an input terminal coupled to said sense line and having an output terminal, said high threshold detector means being formed of an inverter circuit with a high threshold driving transistor and said low threshold detector means being formed of an inverter circuit with a driving transistor which is formed by an implantation technique so as to have a low threshold; and,

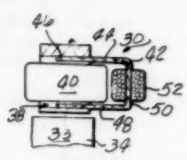
an output means having input terminals coupled to said respective output terminals of said low threshold detector means and high threshold detector means and having an output terminal without any feedback circuitry coupled thereto for providing a first level output signal on an output terminal of said detector circuit when said signal on said sense line rises above said low threshold, said first level output signal remaining until said signal on said sense line rises above and then declines below said high threshold whereupon said output means provides a second level output signal on said detector circuit output terminal.

4,435,659

SPEED SENSOR FOR AN ELECTROMAGNETIC MACHINE

Arnold D. Peterson, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 30, 1982, Ser. No. 431,863
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 R **28 Claims**



1. In a speed sensor for an electromagnetic machine of the type including the combination of a stator having a plurality of stator coils, a plurality of stator teeth, and a plurality of stator slots respectively between said teeth, and a rotor separated from said stator by an air gap, said rotor being adapted to rotate relative to said stator and generating a magnetic field inducing magnetic flux in said stator, the improvement comprising:

a magnetic core having at least one leg extending into one of said stator slots and adapted to be magnetically coupled with the magnetic field generated by said rotor upon rotation of said rotor;

a winding magnetically coupled with said core and within which there is induced an alternating electrical signal having a frequency proportional to the speed of said rotor relative to said stator; and

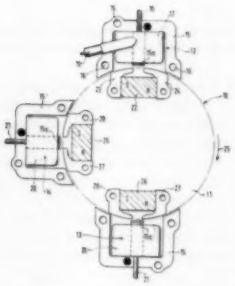
means for mounting said one leg within said one stator slot, said mounting means including an insulative medium substantially filling said one stator slot and surrounding said one leg.

4,435,660

MAGNETO GENERATOR FOR A CONTACTLESS IGNITION SYSTEM

Armin Willer, Heilsbronn, and Herbert Roderer, Nuremberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 213,646, Dec. 5, 1980, abandoned. This application Nov. 4, 1982, Ser. No. 439,313
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951326
Int. Cl.³ H02K *39/00*
U.S. Cl. 310—70 R **6 Claims**



1. In an internal combustion engine having a contactless ignition system and an electrical load, a magneto generator comprising:

a rotor (**11**) for operation in a single predetermined direction of rotation;

a first and second (**22,26**) permanent magnet set in said rotor, spaced apart circumferentially from each other, each having a polarity perpendicular to a radius of said rotor passing through the magnet and each having a magnetic system comprising a first and second pole piece respectively abutting opposite poles of the magnet, said first and second magnets being mounted with opposite polarity with reference to direction of rotation of said rotor;

a first armature (**15**) fixedly mounted relative to the path of said first and second permanent magnets for magnetic interaction therewith, and having a winding connected to said ignition system so that a spark is generated only upon said interaction with said first permanent magnet when said rotor is rotating in said single predetermined direction of rotation;

a third permanent magnet set in said rotor, spaced apart circumferentially from said first and second magnets, having a polarity perpendicular to a radius of said rotor passing through said third magnet, which polarity is the same as that of said second magnet with reference to direction of rotation, said third magnet also having a magnetic system comprising first and second pole pieces respectively abutting opposite poles of said third magnet;

and second and third armatures (**15',15''**) spaced apart from said first armature and fixedly mounted relative to the path of said first, second and third permanent magnets for magnetic interaction therewith and for generating electrical energy in response to said magnetic interaction with said first, second and third magnets.

4,435,661

SUBMERSIBLE PUMP MOTOR FLEXIBLE BEARING

Raymond L. Witten, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed May 10, 1982, Ser. No. 376,791
Int. Cl.³ H02K 7/08
U.S. Cl. 310—90 5 Claims

1. In a submersible pump electrical motor having a rotor shaft with laminations placed in sections and rotated within a stator, an improved bearing means between the sections for supporting the shaft, comprising in combination:

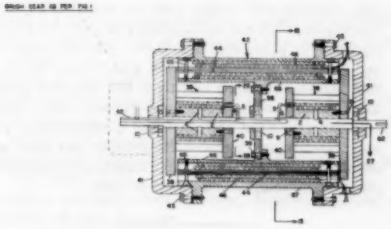
a symmetrical bearing member including at least one sleeve having a cylindrical bore containing the sleeve through which the shaft passes and a plurality of fingers engaging inner periphery of the stator, each finger inclining considering the direction of rotation of the shaft.

4,435,662

AXIAL AIR GAP ALTERNATORS/GENERATORS OF MODULAR CONSTRUCTION

Ian S. Tawse, Weston, Canada, assignor to Gen-Tech, Inc., Miami, Fla.

Division of Ser. No. 38,251, May 11, 1979, Pat. No. 4,297,605. This application Oct. 20, 1981, Ser. No. 313,122
Int. Cl.³ H02K 21/38
U.S. Cl. 310—168 6 Claims



1. An electric generator comprising:

(a) a rotatable shaft,

(b) a rotor mounted on said shaft for rotation therewith and carrying a plurality of magnets on at least one face of said rotor, said magnets being arranged around the axis of said rotor,

(c) a pair of stator plates spaced from said rotor, said plates being so positioned as to place one on each side of the rotor and in a plane parallel to the plane of said rotor,

(d) an annular casing serving to maintain said stator plates in spaced apart relationship and to support said rotatable shaft and rotor,

(e) a ring of magnetic material incorporating a plurality of projecting poles, said ring comprising a continuously wound spiral of magnetic material and being carried by at least one side of at least one stator plate, and said ring being arranged around the axis of said shaft for cooperating with said magnets of said rotor,

whereby a linkage of magnetic flux is established between said poles and said magnets, and

(f) a plurality of induction coils would about and affixed to said poles for cooperation with said poles,

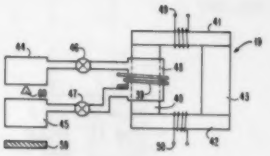
whereby as said shaft and rotor rotate, the cooperation between said magnets, said poles, and said induction coils combine to generate electric current in said induction coils.

4,435,663

THERMOCHEMICAL MAGNETIC GENERATOR

Richard J. Gambino, Thalwil, Switzerland, and Ralph R. Ruf, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,655
Int. Cl.³ H01J 45/00
U.S. Cl. 310—306 15 Claims



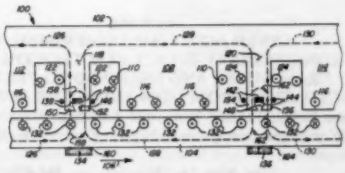
1. In a thermomagnetic generator employing a magnetic material in a predetermined environment cycled between a state of high magnetization and a state of low magnetization positioned in a magnetic circuit, with solenoid coils wound about said circuit, for generating an electrical voltage in response to a variation in the magnetization of said magnetic material, the improvement comprising varying said magnetization by means of a thermochemical reaction.

4,435,664

MAGNETIC INTERPOLE APPARATUS FOR IMPROVING COMMUTATION CHARACTERISTICS OF A DYNAMOELECTRIC MACHINE

Walter F. Boesel, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 13, 1981, Ser. No. 253,450
Int. Cl.³ H02K 27/22
U.S. Cl. 310—186 34 Claims



1. Magnetic interpole apparatus for improving commutation characteristics of a dynamoelectric machine comprising:

(a) magnetizable interpole means having one end arranged for coupling to the yoke of said dynamoelectric machine and the other end providing a pole tip extending radially toward the axis of said machine, said pole tip having a first pole tip portion including a leading edge and a second pole tip portion including a trailing edge and winding slot means traversing in an axial direction from one side to another of said pole tip between said first and second pole tip portions;

(b) magnetizable force means associated with said magnetizable interpole means and arranged to establish therein a first magnetic flux defining a magnetic pole on said pole tip;

(c) flux shift winding means disposed in said winding slot means and encompassing one of said first and second pole tip portions; and

(d) means for coupling said flux shift winding means to an electric current source to generate in said one of said first and second pole tip portions a second magnetic flux for altering the flux distribution therein of said magnetic

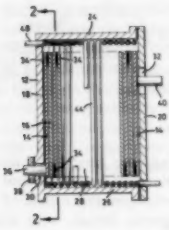
interpole means established by said magnetizing force means.

4,435,665

THERMAL LINEAR ACTUATOR

Kent Farrell, 93 Churchill Rd., Baie D'Urfe, Quebec, Canada

Filed Jun. 21, 1982, Ser. No. 390,269
Int. Cl.³ H02N *10/00*
U.S. Cl. 310—307 **4 Claims**



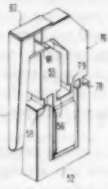
1. A thermal linear actuator assembly comprising;
(a) a plurality of primary linear expansion members,
(b) a plurality of secondary linear expansion members having a substantially different coefficient of expansion to that of said primary members,
(c) said primary and secondary members being alternately arranged in a side-by-side array and serially connected at opposite ends thereof, said array including first and last members each having a free end for attachment to opposite actuator attachment points whereby the thermal linear motion of the free ends in use is equal to the total linear expansion/contraction of the primary members less the total linear expansion/contraction of the secondary members of the array.

4,435,666

LEVER ACTUATOR COMPRISING A LONGITUDINAL-EFFECT ELECTROEXPANSIVE TRANSDUCER AND DESIGNED TO PREVENT ACTUATION FROM DEGRADING THE ACTUATOR

Izumu Fukui; Takeshi Yano, and Takeshige Hamatsuki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,479
Claims priority, application Japan, May 26, 1981, 56-79531; May 26, 1981, 56-79532; Jul. 17, 1981, 56-111975; Jul. 17, 1981, 56-111976; Mar. 25, 1982, 57-46210; Mar. 25, 1982, 57-46211; Apr. 13, 1982, 57-61218; Apr. 30, 1982, 57-73119
Int. Cl.³ H01V *7/00*
U.S. Cl. 310—328 **9 Claims**



1. In a lever actuator comprising a frame member, an elongated longitudinal-effect electroexpansive transducer block having a block axis and first and second end surfaces orthogonally of said axis, and field generating means for generating an electric field having a direction in said transducer block parallel to said axis to produce a reversible strain in said transducer block and thereby to give rise to a translational displacement of said first end surface relative to said second end surface in a direction parallel to said axis, said frame member comprising a base portion, a lever portion having fulcrum, power, and weight points with said fulcrum and said power points disposed on a median plane including said axis, a resilient portion connecting said fulcrum point to said base portion, coupling means for operatively coupling said first end surfce to said power point, and connecting means for connecting said second end surface to said base portion to make said displacement actuate said lever portion and thereby to move said weight point, the improvement characterized in that:

said coupling means comprises a substantially plate-shaped primary portion which is lengthwise rigid and thickness-wise resilient and which operatively couples said first end surface to said power point and has a pair of primary principal surfaces disposed perpendicular to said plane and substantially parallel to said axis;

and

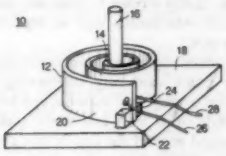
said frame member further comprises a first arm portion having first, second, and third predetermined points with said first and said second predetermined points disposed on said plane, a second arm portion having fourth and fifth predetermined points, a springy portion connecting said first predetermined point to said base portion, a substantially plate-shaped secondary portion which has a pair of secondary principal surfaces disposed substantially parallel to said primary principal surfaces and operatively couples said first end surface to said predetermined point with said primary principal surface pair and said secondary principal surface pair disposed on both sides of said axis, a first additional portion which has a first portion axis and connects said weight point to said fourth predetermined point with said first portion axis interposed between said weight point and said fourth predetermined point, and a second additional portion which has a second portion axis and connects said third and said fifth predetermined points with said second portion axis interposed between said third and said fifth predetermined points, said translational displacement moving said third predetermined point substantially in a direction of movement of said weight point with a different sense.

4,435,667

SPIRAL PIEZOELECTRIC ROTARY ACTUATOR

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Peizo Electric Products, Inc., Cambridge, Mass.

Filed Apr. 28, 1982, Ser. No. 372,636
Int. Cl.³ H04R *17/00*
U.S. Cl. 310—367 **12 Claims**

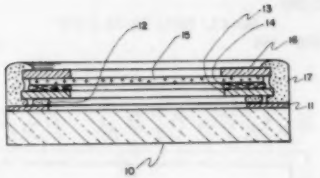


1. A piezoelectric rotary actuator comprising: a rotatable member; a fixed member; a spiral leaf spring attached at one end to said rotatable member and at the other end to said fixed member; a piezoelectric layer attached on one side to said spiral leaf spring; and electrode means for applying a voltage across said piezoelectric layer to bend said spiral leaf spring and rotate said rotatable member.

4,435,668
METHOD OF MAKING RUGGED VIDICON

Ferdinand C. Petito, Alexandria, and Gerald Klauber, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,927
Int. Cl.³ H01J *31/49*
U.S. Cl. 313—388 **2 Claims**



1. A method of making a rugged vidicon including the steps of:

preparing an envelope for such vidicon;

inserting grids and a rugged electron gun in said envelope;

making a retina for said vidicon wherein this step includes the steps of:

preparing a transparent faceplate;

depositing an annular electrode on one side of said faceplate;

depositing an annular bead of adhesive on said annular electrode;

placing a thin annular conductive washer on said bead;

depositing an annulus of liquid electrode material on said washer;

placing a pyroelectric retina on said liquid electrode;

placing a thin annular conductive washer on said retina;

depositing an adhesive to join said washers to each other and to said annular electrode;

mounting the faceplate to the front of said envelope with said retina inside;

pumping a vacuum in said envelope, degassing, getting and tipping off said envelope.

4,435,669
ARC TUBE CONSTRUCTION

Vernon L. Plagge, East Orange, and Ranbir S. Bhalla, Pine Brook, both of N.J., assignors to North American Philips Electric Corp., New York, N.Y.

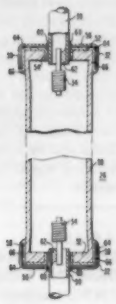
Filed May 7, 1979, Ser. No. 36,949
Int. Cl.³ H01J *17/16*
U.S. Cl. 313—634 **6 Claims**

1. A sealed high pressure sodium discharge lamp arc tube, said arc tube comprising:

an elongated monolithic alumina arc tube body having circular apertures in the ends thereof of a diameter substantially less than the diameter of the arc tube body;

a refractory metal end cap including a flat disc portion and a cylindrical skirt portion having refractory metal tubulation extending through the center thereof, said tubulation extending through said circular apertures in the ends of said arc tube body and said skirt portion of said end cap surrounding the end portions of the side wall of said arc tube body; and

a glassy sealing frit disposed between the interior surface of said end cap and said arc tube body and between the portion of said tubulation extending through said circular

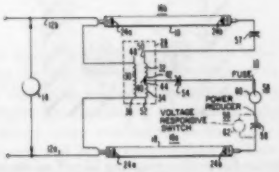


apertures and the interior surfaces of said circular apertures.

4,435,670
ENERGY CONSERVING INSTANT-START SERIES-SEQUENCE FLUORESCENT LAMP SYSTEM WITH OVERCURRENT PROTECTION

George S. Evans, Caldwell; John F. Gilmore, Verona, and Edward W. Morton, Teaneck, all of N.J., assignors to North American Philips Electric Corp., Bloomfield, N.J.

Filed Sep. 8, 1981, Ser. No. 300,319
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—58 **2 Claims**



1. In combination with an instant-start series-sequence fluorescent lamp system including a pair of input terminal means for connecting said system to a power source, a pair of fluorescent lamp means each comprising a elongated tubular vitreous envelope enclosing a discharge-sustaining filling and carrying phosphor means on the inner surface thereof, substantially hollow vitreous re-entrant stem presses sealed to each end portion of said envelope, and having lead-in means sealed therethrough and operatively supporting electrodes within said envelope proximate each end portion thereof, transformer means including a primary winding, a secondary winding and an auxiliary winding, a first of said lamp means having one of said electrodes in circuit between one of said input terminal means and one end of said primary winding, the other of said electrodes of said first lamp means in circuit with a point common to one end of said secondary winding and one end of said auxiliary winding, the second of said lamp means having one of said electrodes in circuit between the other of said input terminals and the other end of said primary winding, the other of said electrodes of said second lamp means in circuit with the other end of said secondary winding, the other end of said auxiliary winding in circuit with said one end of said primary winding, intermediate capacitor means in circuit between said common point and said other electrode of said first lamp means, the improvement which comprises:

a power reducing capacitor means of predetermined capacitance in series circuit with said first lamp means and a

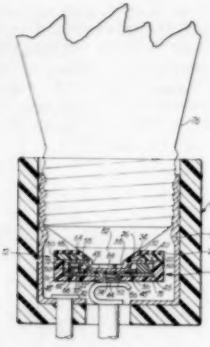
protective device comprising one of (1) a current-responsive fusible member which is in series circuit with said power-reducing capacitor means and is responsive to a current overload to render said lamp inoperative, and (2) a voltage-responsive switch means which is connected in parallel with said power-reducing capacitor means and which normally displays a high impedance, said high voltage-responsive switch means is responsive to a predetermined voltage developed across said power-reducing capacitor to switch to a low-impedance state and effectively remove said power-reducing capacitor means from circuit, whereby said lamp system is protected from overload conditions encountered upon failure of either said first or second lamp means.

4,435,671

DEVICE FOR PROLONGING THE LIFE OF AN INCANDESCENT LAMP

Victor Wouk, New York, N.Y., assignor to Eli, Inc., Cedar Grove, N.J.

Filed Apr. 26, 1982, Ser. No. 371,827
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—200 R **12 Claims**



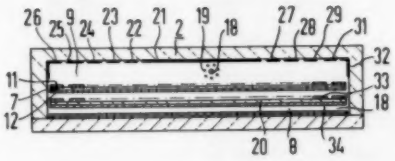
1. A device for prolonging the life of an incandescent lamp, comprising a rectifier unit sized and shaped for insertion into a lamp socket, said rectifier unit including a housing having a first opening provided in one side of said housing and a second opening provided in an opposite side of said housing, said second opening being in general alignment with said first opening, a first electrical contact positioned within said housing, said first electrical contact having an outer portion and an inner portion recessed relative to said outer portion of said first electrical contact and arranged in general alignment with said first opening in said housing, said inner portion of said first electrical contact being sized and shaped so as to engage a bottom contact of a lamp extending into said housing through said first opening therein, a second electrical contact positioned within said housing, said second electrical contact having an outer portion arranged in general alignment with said outer portion of said first electrical contact and an inner portion recessed relative to said outer portion of said second electrical contact and projecting outwardly from said housing through said second opening therein, said inner portion of said second electrical contact being sized and shaped so as to engage a spring leaf contact of a lamp socket, an electrical insulator positioned within said housing between said first and second electrical contacts, and a leadless diode chip positioned off center within said housing, said diode chip having a first contact surface arranged at one end of said diode chip, said first contact surface being in direct and substantially complete electrical engagement with said outer portion of said first electrical contact, and a second contact surface arranged at an opposite end of said diode chip, said second contact surface being in direct and substantially complete electrical engagement with said outer portion of said second electrical contact.

4,435,672

FLAT PICTURE TUBE

Hinrich Heynisch, Gräfelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,386
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112200
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—366 **12 Claims**



1. Flat picture tube, comprising a front plate and a back plate vacuum-tightly connected to said front plate defining an evacuated envelope, a control matrix of line conductors and column conductors respectively extended in planes parallel to said front plate dividing the evacuated envelope into a forward post acceleration space and a rear electron storage space having electricaliy conducting rear and side walls, said control matrix of conductors having crossings with electron passage openings formed in the vicinity thereof, at least one thermal cathode in said rear electron storage space having an emission surface, at least one grid-shaped pulling anode each being associated with a respective one of said at least one thermal cathode and each covering said emission surface of said respective at least one thermal cathode at a substantially constant spacing, at least one other anode disposed in said forward post acceleration space, a fluorescent-material layer disposed on said other anode being excitable by electrons and being at a positive potential of several kV relative to the cathode potential in operation of the tube, at least some of said conductors of said control matrix being disposed so as to face said rear electron storage space and being addressed sequentially, information for an addressed line conductor being simultaneously given to all of said column conductors, and in operation of the tube said rear and side walls of said rear electron storage space and unaddressed line conductors being at potentials preventing electrons emitted into said rear electron storage space from reaching or passing said read and side walls and unaddressed line conductors.

4,435,673

DC BRUSHLESS MOTOR AND ITS DRIVING CONTROL SYSTEM

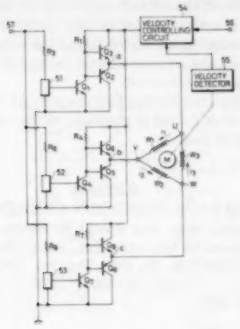
Hiroshi Hagino, Omiya; Kuniyoshi Nakamura, and Eiichi Kotake, both of Yono, all of Japan, assignors to Japan Servo Co., Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 240,225
Claims priority, application Japan, Jun. 11, 1980, 55-78520
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 A **4 Claims**

1. A drive system for a D.C. brushless motor comprising:
a motor base;
a rotor shaft pivotally mounted in said motor base;
rotor magnets operatively connected to said rotor shaft for rotation therewith and equiangularly spaced thereabout;
stator windings insulatively mounted to said motor base and equiangularly arranged about said rotor shaft, said stator windings being spaced from said rotor magnets by an air

gap, said stator windings numbering 3N where N is an integer and being wired into first, second and third winding groups connected in a delta configuration;

first, second and third magnetic induction means for monitoring the magnetic field produced by the rotation of said rotor shaft and magnets and producing respective outputs upon the detection of positive values, each of said first,



second and third magnetic induction means being mounted to said motor base in a position $\pi/6$ radians advanced in the direction of motor rotation from the center of a winding of a respective first, second or third winding group;

amplifier means connected to said first, second and third magnetic induction means for amplifying said detected outputs to apply current to said stator windings groups.

4,435,674

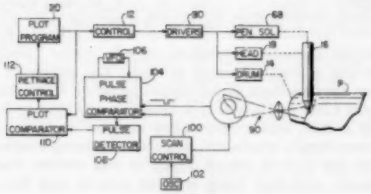
METHOD AND APPARATUS FOR GENERATING A VERIFIED PLOT

Charles M. Hevenor, Bolton, Conn., and David L. Wilson, Bowie, Md., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Oct. 5, 1981, Ser. No. 308,667

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—640 **19 Claims**



1. In a plotting apparatus having a plotting instrument, a programmable controller, and means for moving the plotting instrument in line marking relationship to a recording medium in response to plotting commands received from the controller to produce an actual plot on the recording medium corresponding to a plot program in the controller, the instrument being in the form of a marking instrument moved into contact with a recording medium where line marks are programmed for generation of marks and moved out of contact with the recording medium where no marks are programmed, the plot program including instrument command signals for moving the instrument into and out of contact with the medium, the improvement comprising plot verifying means including a sensing means movable relative to the recording medium for detecting the presence and absence of marks on the recording medium, the sensing means having a sensing axis extending generally perpendicular to the recording medium and being responsive to the presence or absence of marks on the recording medium at the locus of points where the axis of the movable sensing means and the recording medium intersect, means for moving the axis of the sensing means in tracking relationship to the actual plot on the recording medium while the sensing means detects the presence and absence of marks on the medium, comparator means connected with the sensing means and responsive to the instrument command signals in the plot program for comparing the sensed presence and absence of marks in the actual plot on the recording medium with the plot defined in the program and producing an error signal when the actual plot and the programmed plot are not consistent with one another.

4,435,675

BATTERY CHARGING SYSTEM

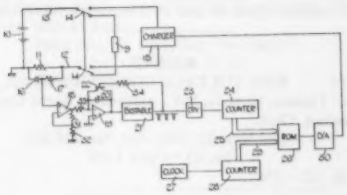
Derek S. Adams, Solihull, England, assignor to Lucas Industries plc., Birmingham, England

Filed May 20, 1982, Ser. No. 380,258

Claims priority, application United Kingdom, May 30, 1981, 8116598

Int. Cl.³ H01M *10/44*

U.S. Cl. 320—22 **6 Claims**



1. A battery charging system comprising a battery, means for determining the state of charge of the battery at the commencement of charging, means for supplying current to the battery, and means for controlling the current supply means, said control means being responsive to the state of charge determining means and being programmed so that during at least the last part of a particular charging cycle the charging current follows a schedule which is selected from a set of charging schedules each of which corresponds to a particular state of charge at the commencement of the charging cycle and each of which is is arranged so that the duration of the entire charging cycle is equal to a desired period of time.

4,435,676

REGULATOR FOR CONTROLLING OUTPUT FROM GENERATOR HAVING AMBIENT TEMPERATURE OVERRIDE

Mitsuharu Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,474

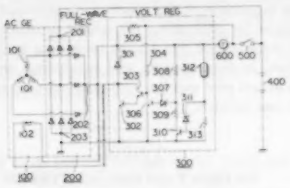
Claims priority, application Japan, Mar. 16, 1982, 57-43582

Int. Cl.³ H02J *7/14*; H02P *9/30*

U.S. Cl. 322—33 **2 Claims**

1. A control device for controlling an output from an AC generator, comprising an AC generator including a field coil, a full-wave rectifier connected to said AC generator and including a first, a second, and a third output terminal, a field current control circuit for controlling a field current through said field coil of said AC generator to maintain an output from said AC generator to a predetermined magnitude, a voltage sensing circuit connected between said second and third output terminals of said full-wave rectifier to sense rectified output between said second and third output terminals to apply a first control signal to said field current control circuit in accordance with

the sensed rectified output, and a temperature sensing circuit connected between said second and third output terminals of said full-wave rectifier to sense an ambient temperature for said AC generator, said temperature sensing circuit being responsive to the ambient temperature in excess of a predetermined magnitude to apply a second control signal for interupting said field current to said field current control circuit in parallel



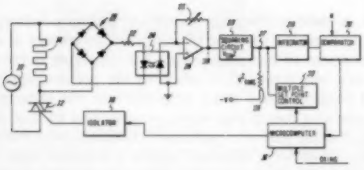
circuit relationship with said voltage sensing circuit, said field current control circuit including an input terminal connected only to said voltage sensing circuit, said temperature sensing circuit being connected to said voltage sensing circuit so that said temperature sensing circuit is responsive to the ambient temperature in excess of said predetermined magnitude set therefor to cause said voltage sensing circuit to apply said second control signal to said field current control circuit.

4,435,677

RMS VOLTAGE CONTROLLER

Dale C. Thomas, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,533
Int. Cl.³ G05F *1/45*
U.S. Cl. 323—235 **8 Claims**



1. A circuit for monitoring and controlling voltage across a load, the voltage being applied from an alternating source and having a zero crossing point for each half cycle of its alternating waveform, said circuit comprising:

(a) means for sampling the voltage across the load;

(b) means coupled to said sampling means for providing a load square signal representing the square of the sampled load voltage;

(c) means for providing a set point signal representing the square of a desired control voltage;

(d) means for continuously combining said load square signal and said set point signal to provide a third signal representing the difference therebetween;

(e) means for continuously integrating said third signal to produce an integrated third signal, the third signal being integrated either toward or away from a predetermined value, so that any voltage errors generated because the load voltage is interrupted only at a one of the zero crossing points are automatically corrected during subsequent load voltage interruption;

(f) means for comparing said integrated third signal with a predetermined reference signal and generating either an on-state or an off-state signal; the on-state signal being generated while the integrated third signal is being integrated toward the predetermined value and the off-state signal being generated when the integrated third signal is at or is being integrated away from the predetermined value;

(g) control means for receiving the on-state or off-state signals from the comparing means and for concurrently receiving an input signal indicating when the applied alternating load voltage is at a zero crossing point, the control means producing an output signal for interrupting half cycles of the alternating voltage to the load for a fixed number of zero crossings or half cycles and then automatically producing an output signal for re-applying the load voltage in response to receipt of an off-state signal at a zero crossing point; and

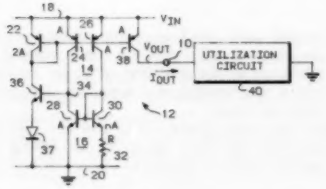
(h) means for interrupting and re-applying the application of voltage to said load in response to the output signal from the control means.

4,435,678

LOW VOLTAGE PRECISION CURRENT SOURCE

Eric D. Joseph, Mesa, and Robert B. Davies, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1982, Ser. No. 352,901
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—273 **4 Claims**



1. A precision current source, comprising:

first and second power supply conductors adapted to receive a supply voltage thereacross;

first and second complementary current mirror circuits interconnected to each other between said first and second power supply conductors, said first current mirror circuit sourcing currents to said second current mirror circuit;

feedback circuit means for sensing a difference current between said first and second complementary current mirror circuits caused by variations in said supply voltage to provide a feedback signal to inhibit said difference current, said feedback circuit means including a first transistor of a first conductive type having an emitter, a collector and a base, said emitter being coupled to said second power supply conductor, said collector being coupled to said first current mirror circuit to sink current sourced thereto, said base being coupled both to said first and second complementary current mirror circuits at a first circuit node; and

output circuit means coupled with said first current mirror circuit having an output adapted to be coupled to an utilization means for sourcing a predetermined and substantially constant current thereto.

4,435,679

PROGRAMMABLE SIGNAL AMPLITUDE CONTROL CIRCUITS

James F. Bedard; Charles W. Eichelberger, both of Schenectady, and Salvatore F. Nati, Jr., Syracuse, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 267,274, May 26, 1981, Pat. No. 4,414,501.
This application May 12, 1983, Ser. No. 479,048
Int. Cl.³ G05B *24/02*
U.S. Cl. 323—350 **19 Claims**

1. A circuit for providing an output signal of controllable

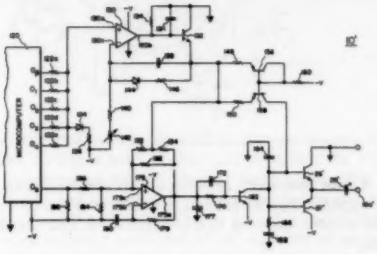
amplitude responsive to the data contained in at least one externally-provided digital control signal, comprising:

feedback oscillator means for providing a periodic output waveform having a selected frequency and a variable amplitude responsive to the magnitude of a first voltage applied to a control input of said oscillator means;

a circuit output terminal at which appears the circuit output signal with said oscillator means output waveform frequency and said controllable amplitude;

first and second sources of circuit operating potential;

a plurality of resistance elements each having a first terminal



thereof connected in parallel to the first terminals of all other resistance elements, and each having a second terminal; said resistance element second terminal being individually connectable to one of said first and second sources of circuit operating potential responsive to said digital control signal data; and

means connected between said resistance element first terminals and said oscillator means control input for supplying to said oscillator means control input said first voltage at an amplitude established by the particular combination of said resistance element second terminals connected respectively to said first and second operating potentials.

4,435,680

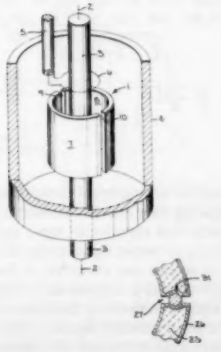
MICROWAVE RESONATOR STRUCTURE

Wojciech Froncisz, Krakow, Poland, and James S. Hyde, Dousman, Wis., assignors to Medical College of Wisconsin, Milwaukee, Wis.

Continuation-in-part of Ser. No. 310,231, Oct. 9, 1981. This application Mar. 25, 1982, Ser. No. 361,595

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—316 **1 Claim**



1. A lumped circuit resonator for a gyromagnetic resonance spectrometer which resonates when high frequency electromagnetic energy is applied thereto, and which comprises:

a loop formed from an electrically insulating base material which is disposed around a central longitudinal axis, said loop having a gap formed along its entire length which is dimensioned to provide a desired resonant frequency,

an electrically conductive layer deposited on the surface of the loop, including the surfaces formed by said gap to shield the base material from the applied high frequency electromagnetic energy, and in which a dielectric rod having a very low thermal coefficient of expansion is inserted in the gap to maintain the dimensions of the gap relatively constant.

4,435,681

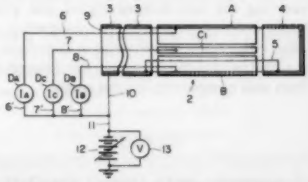
BIPOLAR IONIC CURRENT PROBE UNIT AND METHOD FOR MEASURING POSITIVE AND NEGATIVE CURRENT DENSITIES BY MEANS OF THE SAME PROBE UNIT

Senichi Masuda, No. 605, Nishigahara 1-40-10, Kita-ku, Tokyo-to, and Yutaka Nonogaki, 2-61-1-702, Denenchofu, Ohta-ku, Tokyo-to, both of Japan

Filed Sep. 28, 1981, Ser. No. 306,515

Int. Cl.³ G01N *27/62*

U.S. Cl. 324—459 **4 Claims**



1. A bipolar ionic current probe unit comprising:

a tri-electrode probe, which includes

a narrow elongated central electrode insulatively disposed on an imaginary surface of a small shape having a plane of symmetry along a line of intersection between said imaginary surface and said plane of symmetry, and

a pair of measuring electrodes insulatively disposed on said imaginary surface portions on the opposite sides of said central electrode in a symmetric manner with respect to said line of intersection so as to cover substantially the entire imaginary surface portions on the opposite sides with a small fixed gap clearance spaced from said central electrode;

a hollow metallic support post for insulatively supporting said tri-electrode probe; and

a measuring system which includes

individual electric conductors respectively connected to said said central electrode and said measuring electrodes and extending through the hollow space in said hollow metallic support post as insulated from said hollow metallic support post and from each other,

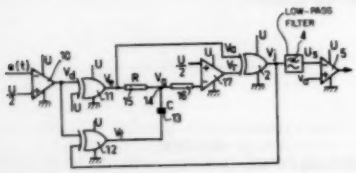
means for measuring minute electric currents with one end connected to said individual electric conductors and the other end connected through a common electric conductor to said hollow metallic support post, and

a variable D.C. voltage source connected between said common electric conductor and a reference potential point.

4,435,682
FREQUENCY DEMODULATOR EMPLOYING A CIRCUIT HAVING A DELAY VARYING WITH THE RECEIVED FREQUENCY

Robert Boudault, Limours, and Gerard Pouzoullic, Gif sur Yvette, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1981, Ser. No. 276,600
Claims priority, application France, Jun. 23, 1980, 80 13866
Int. Cl.³ H03K *9/06*; H03D *3/02*
U.S. Cl. 329—107 **5 Claims**

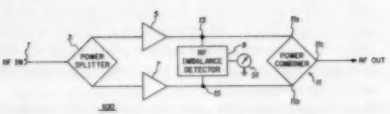


1. A frequency demodulator comprising a first gate circuit having an "exclusive-OR" function and receiving at its two inputs square-wave signals each having a frequency corresponding to a frequency modulated signal, delay means for delaying one of said square-wave signals relative to the other before application to said first gate circuit, and a low-pass filter connected to the output of the first gate circuit, said delay means producing a delay varying with frequency in an inversely proportional sense such that the phase difference between said square-wave signals varies at most from 0° to 180°, characterized in that said delay means comprises an integrating circuit receiving the non-delayed signal and producing an output signal, and a comparator for comparing said output signal of the integrating circuit with a threshold signal and producing a comparator output signal, the delayed signal being derived from said comparator output signal.

4,435,683
RF IMBALANCE DETECTOR

Alan R. Erickson, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 9, 1981, Ser. No. 252,522
Int. Cl.³ G01R *19/00*
U.S. Cl. 330—2 **11 Claims**



1. A radio frequency imbalance detection system for detecting degradation in the performance of a plurality of radio frequency amplifiers comprising:

means for monitoring a first radio frequency output signal from a first radio frequency amplifier, and a second radio frequency output signal from a second radio frequency amplifier;

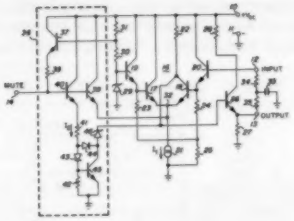
means for comparing said first radio frequency output signal with said second radio frequency output signal to obtain a difference signal; and

means for detecting said difference signal for providing an imbalance indication signal when said different signal exceeds a reference signal.

4,435,684
VIDEO AMPLIFIER MUTE CIRCUIT

Ronald W. Page, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 9, 1982, Ser. No. 366,944
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—51 **4 Claims**



1. A wide bandwidth amplifier circuit which includes a high gain amplifier capable of being muted in response to a muting signal without changing its d-c output level, said circuit comprising:

a differential amplifier having a source of tail current, an inverting input terminal, a noninverting input terminal, and an output;

means for returning said noninverting input to a source of constant bias potential;

means for coupling said inverting input to a source of signal to be amplified;

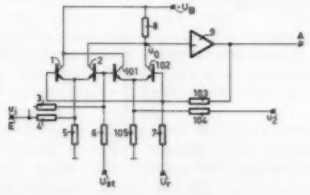
means for shunting said tail current around said differential amplifier in response to said muting signal; and

means for clamping said output to a d-c level, equal to the normal output level of said differential amplifier in its active state, in response to said muting signal.

4,435,685
AMPLIFIER ARRANGEMENT

Wolfgang Eckert, Reinfeld; Bernd Holtkamp, and Ernst A. Kilian, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,921
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026551
Int. Cl.³ H03F *3/45, 1/26*
U.S. Cl. 330—261 **16 Claims**



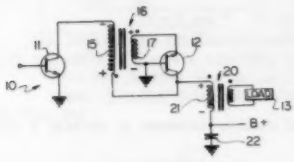
1. An amplifier arrangement comprising at least one pair of transistors having their emitters connected to each other and to a signal source that supplies an input signal to said interconnected emitters, an output signal being derived from the collector current of at least one transistor, at least one compensation circuit which derives a compensation signal from at least one of the two signals comprising the input signal supplied by the signal source and the output signal, and means for applying the compensation signal to the base of at least one of the transistors of the pair and with a phase and an amplitude such that the second harmonic of the signal wave in the output signal is at least partly compensated.

4,435,686

EXTENDED CASCODE AMPLIFIER

William F. Griffith, 920 Jefferson St., Apt. 3, Rochester, Ind. 46975

Filed May 26, 1981, Ser. No. 267,341
Int. Cl.³ H03F 1/00
U.S. Cl. 330—311 2 Claims



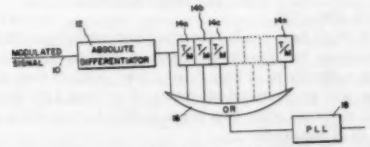
1. An extended cascode amplifier circuit comprising a driver transistor having a base, emitter and collector, the emitter being connected to ground, the base being connectable to a signal source and the collector being connected to one end of a primary winding of a transformer, the other end of the primary winding being connected to the collector of an output transistor, said output transistor having a base and an emitter, the base being connected to ground and, through a secondary winding of the transformer, to the emitter of said output transistor, the transformer windings being phased such that a large driver current is forced through a high impedance of the primary winding which is a multiple of the common base input impedance of the driver transistor.

4,435,687

CLOCK SIGNAL RECOVERY CIRCUIT

Joseph S. Nadan, Ossining, N.Y.; George C. Kenney, II, Stamford, Conn., and Marino G. Carasso, Son, Netherlands, assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 30,259, Apr. 16, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,527
Int. Cl.³ H03L 7/06
U.S. Cl. 331—23 7 Claims



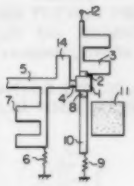
1. A method of recovering a clock signal from a self-clocking digital signal comprising absolute differentiating said digital signal; time delaying said differentiated signal through a plurality of serially coupled delay elements, and providing an output clock signal upon an output from the combined outputs of each of said delay elements and said absolute differentiated signal.

4,435,688

FET MICROWAVE OSCILLATOR BEING FREQUENCY STABILIZED BY CAPACITIVE REACTANCE MICRO-STRIP STUB LINE

Keiro Shinkawa; Masaki Noda, and Chuichi Sodeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1981, Ser. No. 286,511
Claims priority, application Japan, Jul. 25, 1980, 55-101309
Int. Cl.³ H03B 5/18
U.S. Cl. 331—99 15 Claims



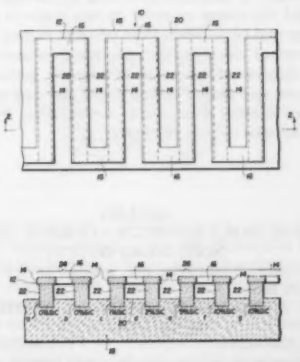
1. A microwave oscillator comprising:
a FET having source, drain and gate terminals;
a micro-strip line connected to said drain terminal, said micro-strip line being grounded at microwave frequencies;
an output line made of a micro-strip line, said output line being connected to the source terminal of said FET;
a gate line made of a micro-strip line, said gate line being connected to the gate terminal of said FET;
a dielectric resonator disposed adjacent to said gate line and electrically coupled therewith and;
a capacitive stub disposed adjacent to said FET and formed by
a micro-strip line of which one end is connected to the source terminal of said FET and the other end is opened, said capacitive stub being a source terminal ground at microwave frequencies.

4,435,689

BROADBAND SLOW WAVE STRUCTURE ATTENUATOR

Hunter L. McDowell, Concord, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1982, Ser. No. 376,314
Int. Cl.³ H01P 1/22
U.S. Cl. 333—81 A 18 Claims



1. A broadband slow wave structure for propagating electrical energy including an attenuator section, comprising in combination:

dielectric substrate means having an upper conductive surface;

meander line circuit means including a serpentine electrical conductor pattern supported on said substrate means; and

support means in the region of said attenuator section consisting of a plurality of attenuator elements intermediate said conductor pattern and said substrate means.

4,435,690

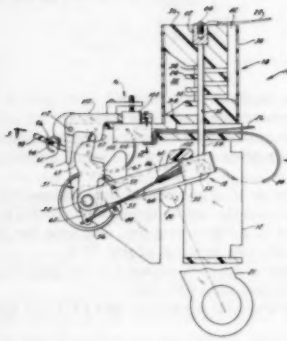
PRIMARY CIRCUIT BREAKER

Edwin A. Link, Waukesha, and Harvey W. Mikulecky, Oconomowoc, both of Wis., assignors to RTE Corporation, Waukesha, Wis.

Filed Apr. 26, 1982, Ser. No. 371,776

Int. Cl.³ H01H 75/12

U.S. Cl. 335—37 **16 Claims**



1. In a fluid distribution transformer, a circuit breaker connected in series with the primary winding of the transformer and adapted to be immersed in the transformer dielectric fluid, said breaker including a frame, a housing mounted on said frame and including a fixed contact, a movable contact mounted on said frame for movement into said housing to engage said fixed contact, first means for biasing said movable contact away from said fixed contact, second means for biasing said movable contact toward said fixed contact, latch means connecting said second biasing means to said first biasing means whereby said contact is held in engagement with said fixed contact by said second biasing means and temperature controlled trip means mounted on said frame in a position to disengage said latch means from said first biasing means when predetermined electrical and temperature conditions exist in the transformer whereby said first biasing means will be released from said second biasing means allowing said first biasing means to move the movable contact away from the fixed contact to open the circuit breaker.

4,435,691

DUAL TRACK RESISTOR ELEMENT HAVING NONLINEAR OUTPUT

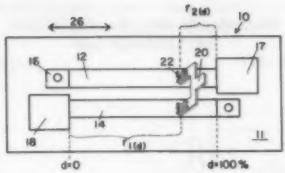
Steven N. Ginn, Mishawaka, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Mar. 22, 1982, Ser. No. 360,373

Int. Cl.³ H01C 10/16

U.S. Cl. 338—125 **17 Claims**

1. A process for producing a variable voltage output, comprising the steps of disposing two resistance layers electrically insulated one from another on an electrically insulated substrate and each resistance layer having a different resistivity, positioning a selectively movable contactor for engagement with the respective surfaces of said layers, and selectively



positioning said slidable contactor to develop a nonlinear voltage output.

4,435,692

LOW ELECTROSTATIC CAPACITY WIRE-WOUND TYPE IGNITION CABLE

Yoshimi Miyamoto; Naotaka Nakamura, both of Aichi; Fumiyoshi Akaku, Mie; Katsumi Koto, Mie, and Tsutomu Kosaka, Mie, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Dec. 28, 1982, Ser. No. 453,976

Claims priority, application Japan, Dec. 31, 1981, 56-197606[U]

Int. Cl.³ H01C 3/06

U.S. Cl. 338—214 **12 Claims**

1. A low electrostatic capacity wire-wound type ignition cable, comprising:

a central reinforcing string;

a ferrite core having a diameter of 1.3 mm or less formed on said central reinforcing string;

a resistance wire, said wire being wound on said ferrite core to form a coil having 8,000 to 14,000 turns/m, said coil having an inductance of about 800 μH/m; and

an insulating layer formed on said coil, said insulating layer comprising a first material having a low dielectric constant.

4,435,693

ELECTRICAL INSULATING REFRACTORY COMPOSITION

Walter R. Johnson, Chuckey, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 7, 1982, Ser. No. 385,343

Int. Cl.³ H01C 1/03

U.S. Cl. 338—238 **3 Claims**

1. A MgO heat conductive electrical insulating embedding composition for sheathing electrical heating elements and having a density of at least 2.385 g/cm³, a static flow at least 45.0 g, and an electrical resistivity of at least 5.85 Megohm-inches measured after two hours at 885° C. consisting essentially of in admixture:

a. from 97.0 to 99.97 weight % MgO, said MgO being minus 40 mesh and having been calcined at a temperature in excess of 1200° C.;

b. from 0.025 to 2.0 weight % of a clay having a soluble salt content less than 0.5% by weight; and

c. from 0.005 to 1.0 weight % fumed silica having a particle size of from 0.2 to 0.7 microns.

2. A sheathed electrical heating element comprising an electrical resistance element, a metal sheath surrounding said elec-

trical resistance element and an improved heat conductive electrical insulating composition embedding said electrical resistance element within said sheath consisting of the composition of claim 1.

4,435,694

AIR TERMINAL GUIDANCE SYSTEM

Elbert M. Riebold, P.O. Box 479, Columbus, Mont. 59019

Filed Jul. 28, 1981, Ser. No. 287,708
Int. Cl.³ G08G 5/00; B64F 1/18
U.S. Cl. 340—953 3 Claims

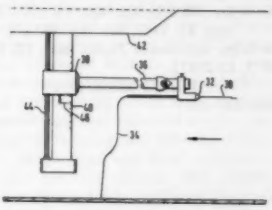
1. In combination with an airport area including various relatively angled runways disposed within said area and subject to use by different aircraft with various sophistication levels of guidance equipment and piloted by persons having various levels of experience, a guidance lighting system including a plurality of generally radially arranged base paths spaced and extending outward from said airport area at substantially ground level and having first approach light means spaced therealong for guidance of aircraft along said base paths when aproaching said airport, said approach light means spaced along each base path emitting the same color distinctive light, the light means of each of said base paths being distinctly different in light emitting color from the color light emitted from the light means spaced along the other base paths, each path of distinctive color light emitting lights means extending outward from said airport area in a predetermined compass direction from said airport area, said base paths equalling four in number and being equally angularly displaced about said airport area, said system also including intermediate radial paths of spaced additional light means, said intermediate paths being equally angularly spaced between adjacent base paths and extending generally radially of said airport area, the light means of each of said base paths includes pairs of lights spaced therealong and disposed in side-by-side rows of lights extending along the corresponding base path, a first row of each pair of rows of lights comprising said first approach light means, the second rows of each pair of rows of lights emitting the same color light distinctively different from colors of the first rows of lights, each row of one set of corresponding rows of lights being disposed to the right of the corresponding other row when viewed while moving along side-by-side rows of lights radially inwardly along the corresponding radial base path, the light means of each intermediate path emitting the same color light corresponding in color to the color light emitted from the distinctive color light emitted from the adjacent base path row of distinctive color lights.

4,435,695

METHOD OF PREDICTING THE APPROACHING STALL OF AN AIRCRAFT WING

John M. Maris, E.R.A.U. Box 2188, Daytona Beach, Regional Airport, Daytona Beach, Fla. 32014

Filed Dec. 22, 1980, Ser. No. 219,188
Claims priority, application United Kingdom, Dec. 24, 1979, 7944397
Int. Cl.³ G08G 5/00
U.S. Cl. 340—966 14 Claims



1. A method of predicting the approaching stall of an aircraft wing, comprising:

sensing air speed over the wing at a predetermined location spaced above the top surface of the wing to thereby produce input signals representative of air speed fluctuations at said location, said fluctuations being caused by air turbulence over the wing;

using said input signals to produce a signal represensative of a ratio of the air speed fluctuations to an average air speed; and

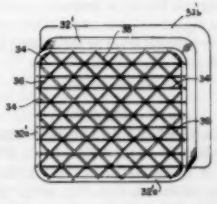
using said ratio signal to produce a signal indicative of imminent stalling.

4,435,696

VISOR ASSEMBLY FOR PEDESTRIAN TRAFFIC SIGNAL

Samuel Gould, San Pedro, and James S. Gould, Los Alamitos, both of Calif., assignors to Indicator Controls Corporation, Gardena, Calif.

Filed Sep. 25, 1981, Ser. No. 305,452
Int. Cl.³ E01F 9/00; F21V 17/00
U.S. Cl. 340—119 5 Claims



1. In combination with a pedestrian traffic signal having a housing, and having legends selectively illuminated by light sources within the housing; a frame mounted on the housing in front of the legends, said frame having a forward end and having a rim portion extending inwardly in coplanar relationship with the forward end of the frame; and a visor mounted in the frame composed of a set of straight strips extending across the frame in mutually spaced and parallel relationship, said straight strips having ends extending under said rim portion, and a plurality of zigzag strips extending across said frame between corresponding ones of said straight strips and between the top and bottom of said frame and said straight strips, said

zigzag strips having ends and apexes, the ends of said zigzag strips extending under said rim portions of said frame, and the apexes of certain ones of said zigzag strips extending under said rim portion at the top and bottom of said frame, said zigzag strips and said straight strips being attached to one another.

4,435,697

ANALOG-DIGITAL CONVERTER

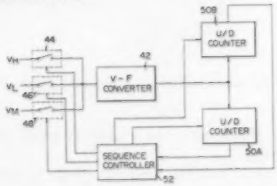
Yukiharu Takahashi, Yokohama, Japan, assignor to Tokyo Shibaura Electric, Japan

Division of Ser. No. 135,662, Mar. 31, 1980, which is a continuation of Ser. No. 855,785, Mar. 10, 1978. This application Aug. 11, 1982, Ser. No. 407,101

Claims priority, application Japan, Mar. 12, 1977, 52-27470; Mar. 12, 1977, 52-27471

Int. Cl.³ H03K *13/20*

U.S. Cl. 340—347 AD **3 Claims**



1. An analog-to-digital conversion method using a voltage-to-frequency converter comprising the steps of:

counting for a first time period in a first counting device set to a first counting mode first pulse signals having a frequency corresponding to a voltage level of a first reference input signal to generate a first count defining a reference point on a voltage-to-frequency characteristic curve of the voltage-to-frequency converter;

setting a second counting device to the first count at the end of the first time period;

counting for a second time period in the second counting device set to a second counting mode second pulse signals having a frequency corresponding to a voltage level of a second reference input signal to generate a second count defining a graduation point of the voltage-to-frequency characteristic curve;

counting for a third time period in the first counting device set to the first count and to the second counting mode third pulse signals having a frequency corresponding to an analog input signal to generate a third count; and

determining the voltage level of the analog input signal from the second count and the third count.

4,435,698

CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF MEASUREMENTS TO A CENTRAL, ESPECIALLY IN A FIRE ALARM SYSTEM

Werner Klett, Ehrenkirchen, Fed. Rep. of Germany, assignor to Hekatron GmbH, Sulzburg, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,258

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1980, 3021920

Int. Cl.³ G08B *29/00, 17/06*

U.S. Cl. 340—512 **8 Claims**

1. Apparatus for the transmission of alarm signals to a detector, comprising

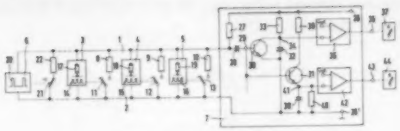
a signaling channel,

means for energizing said signaling channel,

means for applying monitoring signals to said channel at a first frequency,

means for applying alarm signals to said channel at a second frequency greater than that of said first frequency, and

means connected to said channel for detecting the monitoring and alarm signals,



wherein the duration of said monitoring signals is no longer than the interval between said alarm signals.

4,435,699

PROCESS AND INSTALLATION FOR THE REMOTE CONTROL OF A PREMISES WATCH RADAR APPARATUS

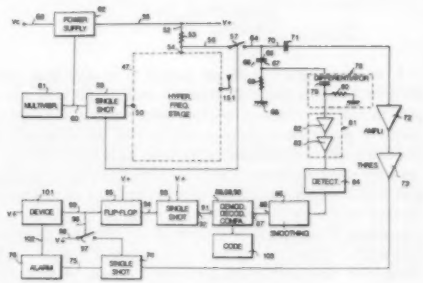
Maurice Tacussel, 105 bis, rue de Point de Jour, 92100 Boulogne-Billancourt, France

Continuation of Ser. No. 739,022, Nov. 4, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,433

Claims priority, application France, Nov. 7, 1975, 75 34214

Int. Cl.³ G08B *1/08, 13/26*

U.S. Cl. 340—539 **16 Claims**



6. A premises watch radar controlled by a portable transmitting device, said radar comprising:

radar means for detecting intrusions including means for transmitting and receiving radiations of energy;

alarm means coupled to said radar means for producing a warning in response to said radar means detecting an intrusion, and having two stable states: an operative state wherein said alarm means is capable of providing a warning in response to intrusions detected by said radar apparatus and an inoperative state wherein said alarm means is inhibited from providing such a warning; said alarm means including means responsive to a switching signal produced by the actuation of a portable transmitting device by an operator for alternatively switching said alarm means from said inoperative state to said operative state and from said operative state to said inoperative state; and

means for temporarily inhibiting said switching means from responding to the switching signal upon a first change of state of said alarm means in response to said switching means, to prevent repeated actuations of said transmitting device by an operator from causing repeated changes of state of said alarm means during a predetermined time period following such first change of state.

4,435,700

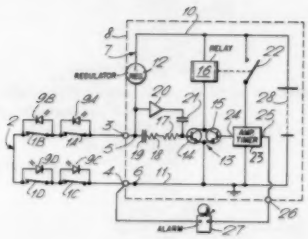
EVENT DETECTION AND INDICATION SYSTEM

Patrick H. Alley, Squirrel Leap, Hagley Rd., Fleet, Hampshire, GU13 8LH, England

Continuation of Ser. No. 197,773, filed as PCT/GB79/00204, Nov. 30, 1979, published as WO80/01214, Jun. 12, 1980, § 102(e) date Jul. 29, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,594

Int. Cl.³ G08B 1/08; H04Q 7/00

U.S. Cl. 340—539 **15 Claims**



1. An event detection and indication system, comprising a loop circuit incorporating a series of event-responsive switches, each such switch having associated therewith means for maintaining electrical continuity within the loop circuit whenever its associated switch is operated to interrupt the loop circuit, the means producing an electrical signal pulse of predetermined characteristic in the loop circuit upon operation of an associated event-responsive switch, remote indication means for indicating a switch has been operated, and a control means for controlling operation of the indication means operationally interposed between the loop circuit and the indication means and exclusively responsive to the operation of an event-responsive switch to produce a control signal which initiates a predetermined operational cycle of the indication means, the indication means responding to such a control signal by completing the predetermined operational cycle irrespective of the restoration of the event-responsive switch which gave rise to the signal to its initial non-operated condition, the control means remaining responsive after completion of the predetermined operational cycle of the indication means to subsequent operation of any other event-responsive switch even though any previously operated event-responsive switch is in its operated condition.

4,435,701

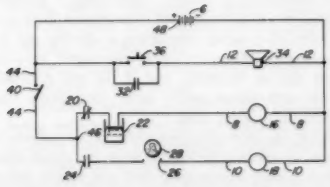
PORTABLE INTRUSION ALARM

Carlos P. Baon, 1763 Geneva Ave., San Francisco, Calif. 94134

Continuation-in-part of Ser. No. 288,606, Jul. 30, 1981, abandoned. This application Oct. 20, 1982, Ser. No. 435,421

Int. Cl.³ G08B 13/14

U.S. Cl. 340—546 **9 Claims**



1. A portable, tippable alarm comprising:
an electrical source having first and second terminals;
an electric warning device;
a latch relay comprising:
first and second latching actuators;
first, second and third switches; and
operating means, operably coupled to said actuators, for closing said second and third switches and opening said first switch when in a first position and for opening said second and third switches and closing said first switch when in a second position;
a position sensitive switch;
first conductor means for electrically connecting said first switch, said position sensitive switch and said first actuator in series with one another and in parallel with said electrical source;
second conductor means for electrically connecting said second switch and said second actuator in series with one another and in parallel with said electrical source;
a normally open silencing switch connected in series along said second conductor means;
third conductor means for electrically connecting said third switch and said warning device in series with each other and in parallel with said electrical source; and
housing means for housing said warning device, said latch relay, said first, second and third conductor means and said position sensitive switch, said position sensitive switch being mounted in said housing means so when said housing means is upright said position sensitive switch is open and when said housing means is displaced substantially from being upright said position sensitive switch is closed.

4,435,702

CAPACITIVELY COUPLED ROTATIONAL SPEED DETECTOR

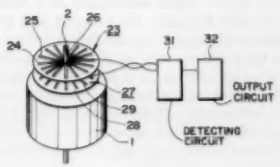
Youg Imai, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,944

Claims priority, application Japan, Aug. 19, 1980, 55-116942[U]

Int. Cl.³ G01P 3/54

U.S. Cl. 340—671 **4 Claims**

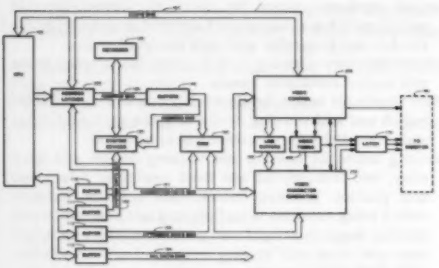


1. A rotational speed detector comprising: a rotating body of a rotating machine having an axis so that said body rotates about the axis, a light-weight rotating member secured to said rotating body and having a first surface encircling said rotating body with a plurality of electrodes arranged on said first surface at a predetermined pitch and forming a continuous circle of alternating electrodes and spaces between said electrodes around said rotating body; a light-weight stationary member having a second surface extending around said rotating body and disposed in opposed facing relation to said first surface of said rotating member, and said second surface having a plurality of electrodes extending around said rotating body at the same pitch as that of the said electrodes of said rotating member with said electrodes on said second surface forming a continuous circle of alternating electrodes and spaces between said electrodes with said electrodes on said rotating member being simultaneously alignable with said electrodes on said stationary member during rotation; and means for detecting a variation in electrostatic capacity between said electrodes of said rotating member and said electrodes of said stationary member, and for producing an output corresponding to a rotational speed of said rotating body in accordance with the variation in electrostatic capacity.

4,435,703
APPARATUS AND METHOD FOR SIMULTANEOUS DISPLAY OF CHARACTERS OF VARIABLE SIZE AND DENSITY

Glenn E. Hunt; Michael C. Alexander; Gerald L. Lozano, and Gerald O. Manktelow, all of Austin, Tex., assignors to Data General Corporation, Westboro, Mass.

Filed Jul. 6, 1981, Ser. No. 280,613
Int. Cl.³ G09G 1/16
U.S. Cl. 340—723 **3 Claims**



1. In a raster scan CRT display terminal, the method of providing a dot clock signal and character clock signal of variable frequency to the display logic of said terminal whereby multiple character sizes and densities may be displayed during the same frame, said method comprising the steps of:

providing a first dot clock signal;

providing a second dot clock signal having a frequency different from said first dot clock signal;

providing a character rate signal indicating which of said dot clock signals is to be provided to said display logic during the character row;

if said character rate signal is in a first state, generating said character clock signal responsive to a first plurality of pulses of said first dot clock signal and providing said character clock signal and said first dot clock signal to said display logic during display of said character row;

if said character rate signal is in a second state, generating said character clock signal responsive to a second plurality of pulses of said second dot clock signal and providing said second dot clock signal and said character clock signal to said display logic during display of said character row; and

repeating the above steps for each character row.

4,435,704
LOOP TRANSMISSION SYSTEM

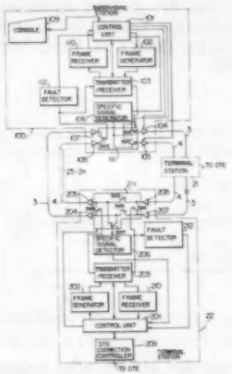
Toyokazu Hashimoto, Kanagawa; Hiroyuki Wada, Hadano; Masahiko Kida, Hadano; Hisashi Matsumura, Hadano, and Susumu Nakayashiki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 354,918
Claims priority, application Japan, Mar. 13, 1981, 56/35337; Sep. 7, 1981, 56/139715
Int. Cl.³ H04Q 9/00; G06F 11/00
U.S. Cl. 340—825.01 **14 Claims**

1. A loop transmission system including a plurality of stations connected in series in a pair of looped transmission lines, wherein said plurality of stations include a supervising station and at least one terminal station,

said supervising station comprising specific signal sending means for sending out a specific signal selected one of said pair of transmission lines which is to be operated as a spare line not used for data transmission, and

said terminal station comprising specific signal detection means capable of detecting said specific signal from said specific signal sending means through either one of said pair of transmission lines, and discrimination means for controlling the transmission line through which said specific signal is detected by said detection means to operate as a spare transmission line which is not used for data

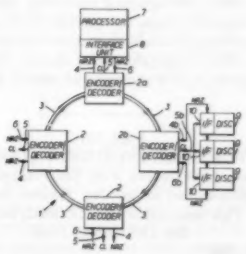


transmission and for controlling the transmission line through which said specific signal is not detected to operate as a currently used transmission line for data transmission.

4,435,705
DATA TRANSMISSION SYSTEMS

Reginald W. Stevens, Stockport, England, assignor to International Computers Limited, Stevenage, England

Filed Feb. 16, 1982, Ser. No. 348,942
Claims priority, application United Kingdom, Feb. 18, 1981, 8105133
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.05 **7 Claims**



1. A data transmission system comprising a plurality of encoder/decoders and a plurality of transmission links each for the transmission of a signal combining a carrier and a data signal, each encoder/decoder being connected between an incoming one and an outgoing one of the said transmission links and the said transmission links connecting the encoder/decoders in a closed ring;

each encoder/decoder comprising means for recovering an input data signal and the carrier from the signal received from its incoming transmission link and means connected to receive the recovered carrier and an output data signal for combining the carrier and the output data signal for output onto its outgoing transmission link, the encoder/decoder thereby providing a path for the carrier from its incoming to its outgoing transmission link;

each such path together with the transmission links provid-

ing a single closed path for circulation of the carrier which path is subject to variation in its length; and

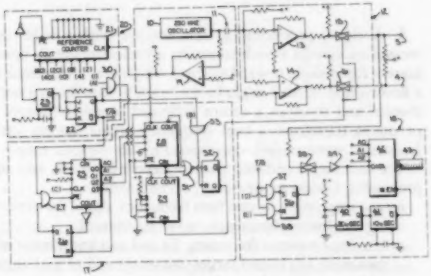
the ring as a whole forming a single oscillatory system which sustains the carrier once initiated without the simultaneous injection of carrier into the said closed path from a source outside the said closed path at a frequency constant around the ring but free to vary with time in dependence of the length of the closed path and such as to give an integral number of carrier cycles around the ring.

4,435,706

SWITCH NETWORK

John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 2, 1981, Ser. No. 317,474
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.08 **3 Claims**



1. A network for ascertaining the state of a plurality of sensing devices, which comprises:

a communications line;

a master controller connected to the communications line for generating address signals thereon, the master controller including,

(a) address generator means for establishing a sequence of station numbers,

(b) oscillator means for generating sinusoidal waveforms,

(c) analog switch means for coupling the oscillator means to the communications line, the analog switch means being operated by the address generator means to sequentially generate series of sinusoidal waveforms on the communications line, the number of such waveforms in each series being determined by the station number established by the address generator means, and

(d) a receiver circuit coupled to the communications line and being operable to read the voltage level of the communications line a predetermined time interval after each series of sinusoidal waveforms is generated; and a remote station connected to the communications line and connected to an associated sensing device, the remote station including:

(e) counter means for counting the number of sinusoidal waveforms in each series,

(f) comparator means coupled to the counter means and being operable to generate an enabling signal when the counted number of sinusoidal waveforms corresponds to a preset station number, and

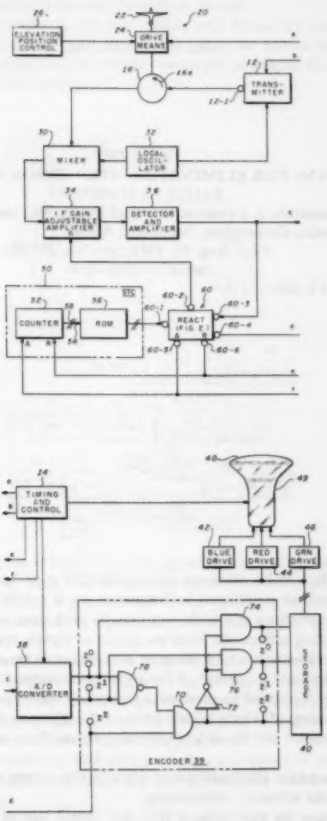
(g) response means coupled to the comparator means and the station's associated sensing device for generating a preselected voltage level on the communications line during the predetermined time interval after the series of sinusoidal waveforms is generated when the enabling signal is present, the voltage level being indicative of the state of the station's associated sensing device.

4,435,707

WEATHER RADAR WITH SIGNAL COMPENSATION FOR PRECIPITATION

John F. Clark, Princeton, N.J., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,782
Int. Cl.³ G01S *13/95*
U.S. Cl. 343—5 W **3 Claims**



1. In a weather radar of the type including a sensitivity time control (STC) circuit coupled to an IF amplifier in a receiver which in turn is coupled to an antenna for receiving pulses reflected from precipitation in the path of pulses radiated from the antenna, the STC for providing a signal as a function of time to vary the gain of the IF amplifier and an analog-to-digital (A/D) converter coupled between the IF amplifier and an addressable memory having an output coupled to a display device, the improvement comprising:

means coupled to receive amplified siganls from said IF amplifier for integrating said amplified signals over a preselected time interval to obtain an integrated signal value and provide a signal representative of said integrated signal value after said time interval has expired;

summing means coupled to receive said signal representative of said integrated signal at said expiration of said time interval and to receive said STC signal at a time substantially in coincidence with said expiration time for providing a signal at an output terminal representative of a sum of said integrated signal value and said STC signal, said

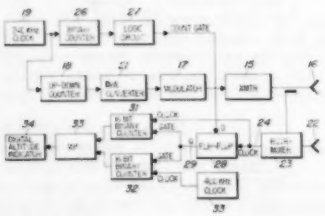
sum representative signal coupled to cause said IF amplifier to exhibit a variable gain in accordance therewith; and means coupled between said summing means output terminal and said IF amplifier for limiting variable gain control signals coupled to said IF amplifier to levels that insure that said IF amplifier operates at gains that are no greater than a preselected maximum.

4,435,708

MEANS FOR ELIMINATING STEP ERROR IN FM/CW RADIO ALTIMETERS

Constantinos S. Kyriakos, Deerfield Beach, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 10, 1981, Ser. No. 291,854
Int. Cl.³ G01S *9/04*
U.S. Cl. 343—12 A **6 Claims**



1. In a radio altimeter of the FM/CW type having a radio transmitter modulated in frequency by a cyclic modulating wave, portions of which vary linearly with time, a receiver for receiving reflections from an object of signals transmitted by said transmitter and a mixer to which signals received by said receiver and a portion of the signal transmitted by said transmitter is applied to produce a frequency difference signal the frequency of which is indicative of the distance between said transmitter and the object reflecting signals from said transmitter,

means for eliminating step error in the output indication of the altimeter, comprising,

means for generating a first gate signal having a logic "1" level during times said modulating wave varies linearly with time and a logic "0" level at other times;

logic means to which said first said gate signal and said frequency difference signal are applied, said logic means being responsive to said logic "1" level of said first gate signal and said frequency difference signal to produce a second gate signal having a logic "1" level of duration beginning with the coincident appearance of said logic "1" level of said first gate signal and the beginning of a cycle of said difference frequency signal and extending for an integral number of cycles of said frequency difference signal while said first gate signal remains at said logic "1" level;

means controlled by said logic "1" level of second gate signal for determining the frequency of said difference frequency signal during the period of said logic "1" level of said second gate signal; and

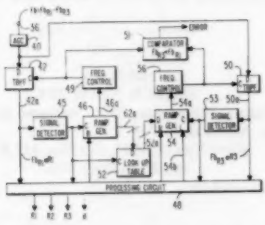
means for numerically processing said frequency of said difference frequency signal to provide a distance indication as the output of said altimeter.

4,435,709

RADAR RANGING SYSTEM FOR USE WITH SLOPING TARGET

Ronald W. Kipp, Croydon, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 26, 1981, Ser. No. 266,983
Int. Cl.³ G01S *13/32*
U.S. Cl. 343—14 **14 Claims**



1. A signal processing system for use with a radar range measuring system which transmits a radio frequency beam of known finite angle toward a target which is at not greater than a known non-normal angle to the beam to illuminate a portion thereof and receives a return reflected signal therefrom and produces therefrom a beat frequency signal having various frequency components corresponding to various ranges between said target and said range measuring system, said signal processing system comprising in combination:

means responsive to said beat frequency signal for determining the lowest frequency value F_L thereof;

means responsive to frequency F_L and to a knowledge of the maximum angle said target can attain and to said angle of said transmitted beam for determining the maximum frequency F_X associated with the maximum distance to said target; and

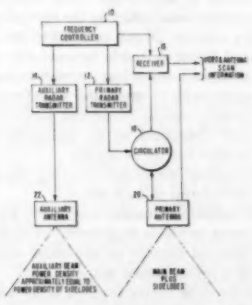
means responsive to frequency F_X and to said beat frequency signal for determining the actual maximum frequency F_H contained in said beat frequency signal.

4,435,710

SYSTEM FOR OBSCURING ANTENNA SIDELOBE SIGNALS

Norman F. Powell, Howard, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 31, 1981, Ser. No. 253,322
Int. Cl.³ G01S *7/36*
U.S. Cl. 343—18 E **4 Claims**



1. A radar system comprising:

(a) first means for producing a first pulsed radar signal which is coupled to an antenna to transmit a radar beam having a predominant main beam and sidelobes;

(b) a receiver coupled to an antenna to receive signals, having a frequency spectrum substantially equal to the frequency spectrum of said main beam;

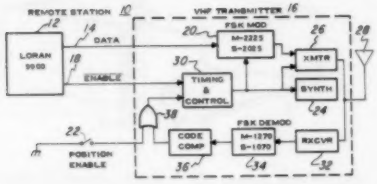
(c) second means for producing and transmitting a second pulsed radar signal having a power density which is at least substantially equal to the power density of said sidelobes of said radar beam and a frequency spectrum which at least includes the frequency spectrum of said first pulsed radar signal.

4,435,711

RADIO TELEPHONE WITH POSITION TRANSMISSION CAPABILITY

Cecil C. Ho, Irving; Claude A. Sharpe, Plano; Bruce A. Butcher, Dallas, and Alexander G. Bell, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 15, 1980, Ser. No. 187,253
Int. Cl.³ G01S *1/24*
U.S. Cl. 343—389 **4 Claims**



1. A communication data link system comprising:

(a) a base radio transceiver station including a receiver for receiving incoming messages, a polling generator means for generating a carrier identification code signal, a transmitter operatively connected to the polling generator means for transmitting the code signal and a display means for displaying the messages; and

(b) a remote radio transceiver for a carrier including a LORAN-C navigation system for outputting signals representative of the carrier's position, a transmitter of the transceiver connected to the navigation system output for transmitting the carrier position signals, a receiver means for receiving the carrier identification code signal transmitted by the base radio transceiver station and a switching means for controlling selectively the automatic and manual transmittal of the carrier position whereby the carrier position may be transmitted in response to receipt of the carrier identification code signal or to manual actuation of the switching means for single transmission or continuous transmission.

4,435,712

FM-CW RADAR RANGING SYSTEM WITH SIGNAL DRIFT COMPENSATION

Ronald W. Kipp, Croydon, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,573
Int. Cl.³ G01S *7/40*
U.S. Cl. 343—17.7 **10 Claims**

1. A frequency modulated-continuous wave (FM-CW) ranging system including a calibration means for simulating a target of known electrical length R_C, said system determining range R_T to a real target comprising in combination:

means for producing an FM-CW radio frequency signal;

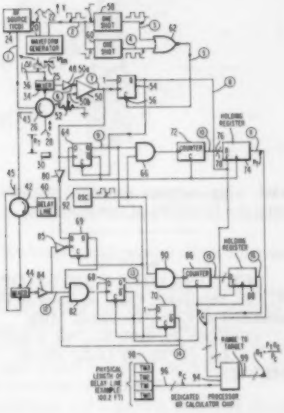
means for transmitting said FM-CW signal to said real target and for receiving return signals therefrom delayed in accordance with the target range;

means for transmitting said FM-CW signal to said calibration means concurrently with its transmission to said target and for receiving return signals from said calibration means delayed in accordance with the simulated range thereof;

means for mixing the transmission signal and return signal from said real target to produce a real target beat frequency signal, the frequency of which is indicative of range to said target;

means for mixing the transmission signal and return signal from said calibration means to produce a calibration beat frequency signal, the frequency of which is indicative of range simulated by said calibration means;

means responsive to the real target beat frequency signal representative of said real target range for producing a control signal only when said real target beat signal is of at least a given quality;



means responsive to said control signal and to a given cycle of said real target beat frequency signal for determining a signal of value P_T indicative of the period of said real target beat frequency signal only when said control signal is present;

means responsive to at least a selected cycle of said calibration beat frequency signal occurring during the same time said given cycle of real target beat frequency occurs for determining a signal of value P_C indicative of a period of the calibration beat frequency signal; and

means responsive to said signal of value P_T, signal of value P_C and calibrated range R_C for determining said target range R_T.

4,435,713

WHIP ANTENNA CONSTRUCTION

Bernard Gasparaitis, Tamarac; Thomas W. Long, Jr., and Charles P. Richardson, both of Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1981, Ser. No. 323,220
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—702 **4 Claims**

1. A whip antenna assembly for attachment to a receptacle in a communications device comprising:

a highly flexible conductive antenna cable having a first and second end,

a conductive metal base section injection cast onto said antenna cable first end,

a knob injection cast onto said cable second end, and

an environmental cover injection molded over said antenna cable and base section to provide protection and support

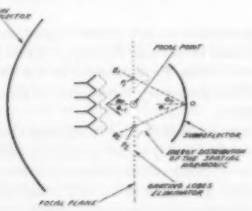
for said whip antenna assembly without substantially reducing the flexibility of said assembly.

4,435,714

GRATING LOBE ELIMINATOR

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Dec. 29, 1980, Ser. No. 220,633
Int. Cl.³ H01Q *15/02, 19/19*
U.S. Cl. 343—753 **6 Claims**



1. An antenna system for radiating energy having a radiating array, a secondary energy convergence aperture means, and a main energy convergence aperture means, said antenna system including:

orthogonally linearly polarized feed elements;

a grid of parallel conducting strips placed in the focal plane of said antenna system, said strips being oriented in the direction of the uplink wave polarization thereby eliminating the grating lobes at the uplink frequency band by reflecting the energy of the particular spatial harmonic components which give rise to the grating lobes;

said grid of conducting strips being positioned between said secondary energy convergence aperture means and said main convergence aperture means, and the spacing between adjacent parallel conducting strips being greater than zero and less than one-tenth of the wavelength of the radiated energy; and

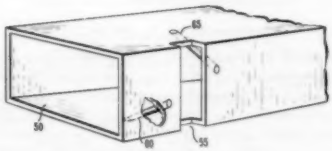
said grid of parallel conducting strips having a first segment and a second segment spaced from one another by an opening and centered about said main energy convergence aperture means so that a substantial portion of the beam from said secondary energy convergence aperture means to said main energy convergence aperture means can pass through said opening between said first and second segments.

4,435,715

ROD-EXCITED WAVEGUIDE SLOT ANTENNA

James S. Ajioka, Fullerton, and Dick M. Joe, Anaheim, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 29, 1980, Ser. No. 191,880
Int. Cl.³ H01Q *13/18*
U.S. Cl. 343—771 **3 Claims**



1. In a power-radiating slotted waveguide having a rectangular waveguide which has first and second broad walls and first and second narrow walls, the first one of said narrow walls having a substantially non-inclined slot formed therein, the improvement comprising:

(a) a first substantially linear conducting rod having one end rigidly connected to said first narrow wall adjacent to one long edge of said slot and having the second end rigidly connected to the first broad wall; and

(b) a second substantially linear conducting rod having one end rigidly connected to said first narrow wall adjacent to the opposite long edge of said slot as said first rod and having the second end rigidly connected to the second broad wall.

4,435,716

METHOD OF MAKING A CONICAL SPIRAL ANTENNA

Adrian Zandbergen, 28 Camano La., Port Ludlow, Wash. 98365

Filed Sep. 14, 1981, Ser. No. 301,925
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—895 **3 Claims**

1. The method of making a freestanding antenna which comprises placing a conductor wire coil tapered from a base end portion thereof to a tip end portion thereof in substantially axial alignment with the interior of a preformed elongated casing having an interior tapered in the same direction as the taper of the coil, with the major portion of the casing interior length of a cross section larger than the external cross section of the tip end portion of the coil but smaller than the external cross section of the base end portion coil, and the interior of the casing having a smaller degree of lengthwise taper than the degree of taper of the coil, elongating the coil within the casing and simultaneously thereby decreasing its degree of taper to

match the degree of taper of the casing interior and to lodge convolutions of the coil against the interior of the casing in

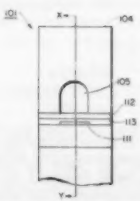
spaced relationship lengthwise of the casing, and bonding the elongated coil to the interior of the casing.

4,435,717

LIQUID JET RECORDING PROCESS AND RECORDING LIQUID THEREFOR

Tsuyoshi Eida, Chiba, and Masatsune Kobayashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,645
Claims priority, application Japan, Apr. 10, 1981, 56-54562
Int. Cl.³ G01D *9/00, 15/16*
U.S. Cl. 346—1.1 **12 Claims**



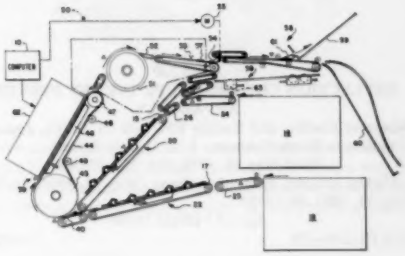
1. A liquid jet recording process comprising exerting thermal energy to a recording liquid to form liquid droplets and performing recording with these liquid droplets, which is characterized in that said recording liquid comprises at least a dye having in the molecule 1 to 6 hydroxyl groups and no amino group and 1 to 3 members selected from the group consisting of a sulfo group and a carboxyl group, 1 to 4 azo groups, and 0 to 2 imino groups, and a thermal decomposition point of 250° C. or more and a liquid medium therefor.

4,435,718

INK DROP PRINTING SYSTEM

Frederic L. Clark, Plano; Orville A. Kaffenberger, Jr.; Suresh C. Paranjpe, both of Dallas; David W. Smith, Richardson, and Jack D. Ames, Irving, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,424
Int. Cl.³ G01D *15/18;* **B65H** *3/30*
U.S. Cl. 346—75 **6 Claims**



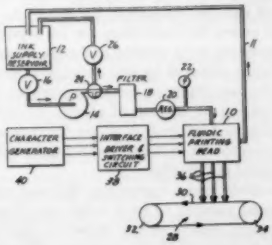
1. An ink drop printing system comprising:
a pair of storage trays for storing separate supplies of printing sheets,
feed means for feeding said printing sheets from said storage trays,
sheet delivery means for receiving said sheets from said feed means and delivering said sheets along generally converging delivery paths toward a common reception point,
transport means for transporting said printing sheets along a printing path which is folded backwardly and upwardly from said common reception point,
at least one inclined and angularly extending jet drop printing head supported adjacent said transport means for progressively printing said sheets as they are transported therepast,
sheet registraton means for registering the edges of said sheets prior to passage beneath said printing head, and
inverting means for receiving printed sheets from said transport means, inverting said sheets, and delivering said sheets to said sheet delivery means for redelivery to said transport means and printing on the reverse sides thereof.

4,435,719

FLUIDIC MATRIX PRINTER

Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107

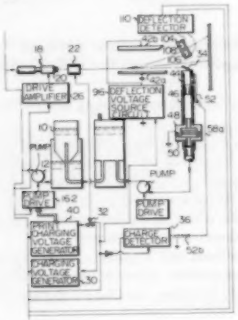
Filed Mar. 30, 1982, Ser. No. 363,461
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



1. A fluidic printing apparatus comprising;
a plurality of fluidic printing elements arranged in an array; said fluidic printing elements being biased beam deflecting type fluidic flip-flop elements;

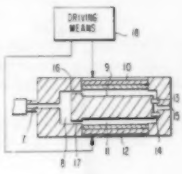
a fluid circulating means for circulating printing fluid through said array of fluidic printing elements;
paper transport means for transporting paper past said array of fluidic elements; and
electronic means for selective electronic activation of said beam deflecting fluidic printing elements to discharge said printing fluid unto said paper in a predetermined pattern.

4,435,720
DEFLECTION CONTROL TYPE INK JET PRINTING APPARATUS
Masanori Horike, and Yutaka Ebi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed May 14, 1982, Ser. No. 378,450
Claims priority, application Japan, May 21, 1981, 56-76926; May 21, 1981, 56-76925
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



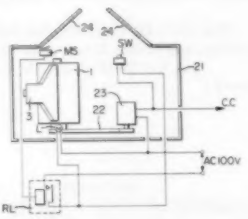
1. A deflection control type ink jet printing apparatus comprising:
an ink ejection head for ejecting a jet of ink;
charging means for electrostatically and selectively charging ink droplets separated from the jet of ink;
deflection means for electrostatically deflecting the charged ink droplets to a plurality of predetermined steps in accordance with the electrostatic charges on the ink droplets;
deflection detecting means for detecting a deviation from a reference deflection of a deflection of the charged ink droplets which are deflected to predetermined one of the plurality of steps;
ink supply means for supplying an ink under a predetermined variable pressure to the head; and
control means for controlling the ink supply means to vary the pressure to be applied to the ink in accordance with a deviation detected by said deflection detecting means;
the deflection detecting means comprising electrode means for sensing an amount of charge on each deflected ink droplet, and computing means for computing the deviation in response to the sensed amount of the charge on the deflected ink droplet;
the electrode means comprising first and second electrodes disposed parallel to each other and downstream of the deflection means, an ink deflection path through which the ink droplets of the reference deflection are to pass being defined intermediate between the first and second electrodes, the electrodes being constructed to sense voltages induced by the deflected ink droplets passing through said ink deflection path.

4,435,721
PRINT HEAD FOR AN ON-DEMAND TYPE INK-JET PRINTER
Mitsuo Tsuzuki, and Michihisa Suga, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed May 5, 1982, Ser. No. 375,147
Claims priority, application Japan, May 6, 1981, 56-67966
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **11 Claims**



1. A print head for an on-demand type ink-jet printer for jetting ink droplets on a printing medium, said print head comprising:
a plurality of pressure chambers filled with ink;
a plurality of pressure exertion means for exerting pressures on said ink filled in said pressure chambers in response to driving signals;
a nozzle for jetting said ink droplets;
means for communicating said pressure chambers with said nozzle; and
a plurality of first fluid control means disposed in ink passages between said pressure chambers and said nozzle for controlling the flow of ink in response to the ink pressure.

4,435,722
ELECTROPHOTOGRAPHIC RECORDING APPARATUS
Hideaki Kato, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1981, Ser. No. 254,464
Claims priority, application Japan, Apr. 15, 1980, 55-51535[U]
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **5 Claims**



1. In an electrophotographic recording apparatus including a housing, a rotatable charge carrying drum in the housing, an electrostatic recording head disposed in closely spaced gap-defining proximity to the surface of the drum for impressing an electrostatic latent image thereon, a door of the housing movable between closed and open conditions to enable access to the interior of the housing, and means for effecting operative rotation of the drum and for normally disabling drum rotation when the housing door is open, the improvement comprising:
light means in the housing,
means for illuminating said light means when the housing door is in its open condition,
said light means being so disposed adjacent the closely spaced proximity of the drum and recording head and at a location remote from the housing door that, when the

door is open, said light means illuminates the gap between the drum and recording head for ready viewing from the open housing door, and

manually operable means for enabling selective rotation of the drum only when the housing door is in its open condition so that, when the housing door is open and the gap between the drum and recording head is illuminated by said light means, operation of said manual means to selectively rotate the drum enables ready viewing of the gap throughout the full rotative circumference of the drum to thereby facilitate servicing of the recording apparatus.

4,435,723

RECORDING APPARATUS WITH EDITING CAPABILITY

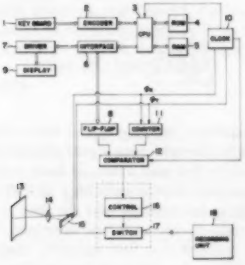
Ryubun Seimiya; Shigeru Inowa, both of Hino; Noriyoshi Tarumi, Hachioji; Masahiko Matsunawa, Hachioji, and Hiroshi Tokunaga, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,865

Claims priority, application Japan, Aug. 8, 1980, 55-123525; Sep. 8, 1980, 55-123523

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—154 **6 Claims**



1. A document editing apparatus comprising means determining the spatial coordinates of that portion of a document image to be extracted or erased, means translating said coordinates into electrical signals, means storing such coordinate signals, means scanning a document to be edited, means converting the optical image of said document into electric image signals, means recording the edited document, means producing control signals from said stored coordinate signals, including switching means determining whether the selected portions of the document image should be extracted or erased, image signal switching means for actuating said recording means, and means applying said electric image signals and said control signals to said image signal switching means.

4,435,724

SINGLE PIECE CARRIER FOR INTEGRATED CIRCUIT DEVICES

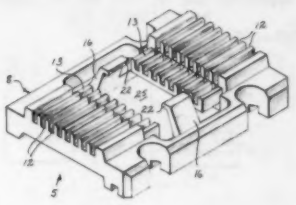
Donald E. Ralstin, South Bend, Ind., assignor to Wells Electronics, Inc., South Bend, Ind.

Filed Sep. 10, 1981, Ser. No. 301,001

Int. Cl.³ H01L *23/42, 39/02;* **H02G** *13/08*

U.S. Cl. 357—79 **5 Claims**

1. A single piece carrier for an integrated circuit device having a body with leads extending therefrom, said carrier comprising a frame having upper and lower faces, said frame having a device-receiving opening extending from said upper face to said lower face, said upper face including spaced grooves, said frame opening for accommodating the body of said device and said frame grooves for receiving the leads of said device, at least two spaced apart arms projecing above said frame upper face, the lower end of each arm connected to a bar means extending between spaced sections of said frame adjacent the periphery of said frame opening, each bar means being rotatable about its longitudinal dimension for pivotally moving its connected arm between an open position wherein the leads of said device can be located within said frame



grooves and a closed position wherein said device can be engaged by said connected arm to secure the device with its leads in said frame grooves to the carrier, each bar means being biased to urge its connected arm into its said closed position.

4,435,725

COLOR SIGNAL PROCESSING CIRCUIT TO REDUCE CROSS-COLOR DISTURBANCE AND COLOR FRINGING

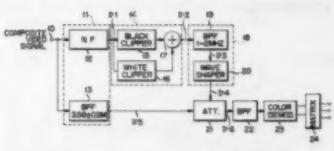
Nobuya Nagao, and Teturou Sakai, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 13, 1981, Ser. No. 310,725

Claims priority, application Japan, Oct. 16, 1980, 55-143619

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—36 **3 Claims**



1. A color signal processing circuit comprising:

a signal separating circuit means for separating a composite video signal including a luminance signal and a carrier chrominance signal multiplexed with the luminance signal to the carrier chrominance signal and the luminance signal;

a clipping circuit means coupled to receive the luminance signal from said signal separating circuit means for clipping the luminance signal at levels near its black and white peak levels to produce a signal containing level transitions indicative of large luminance signal transitions;

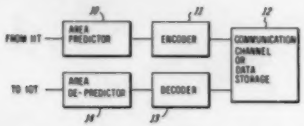
a control pulse generating circuit means coupled to said clipping circuit means for generating control pulses corresponding to said level transitions;

a signal transmission path coupled to receive the carrier chrominance signal from said signal separating circuit means, and including a signal attentuating circuit means for attenuating the carrier chrominance signal applied thereto in response to application of control pulses from said control pulse generating circuit means.

4,435,726
ONE SHOT PREDICTOR FOR MIXED MODE DOCUMENTS

Henry H. Liao, Rossmoor, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 161,474, Jun. 20, 1980. This application Aug. 24, 1981, Ser. No. 295,902
Int. Cl.³ H04N 7/12
U.S. Cl. 358—135 **4 Claims**



1. The method of using an m bit pattern of video data of the previous and current scan lines to predict each current bit in each n bit nibble of data of a raster input scanner bit stream, and to produce an n bit nibble of predicted output per clock comprising the steps of:

first, during a first clock period, using all m bits of video except the z bits immediately preceding each current bit to produce all possible predicter outputs for each of the n bits in the current nibble,

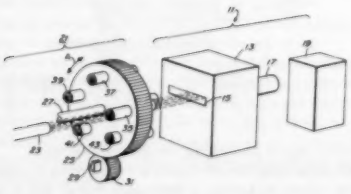
second during a second clock period using said n bit data nibble and the z bits immediately preceding each of said n bits to produce the final n predicted output bits, and

concurrently performing said first step on the current nibble and said second step on the preceding nibble so that n bits of predicted data are produced for each clock.

4,435,727
APPARATUS AND METHOD FOR USE IN CALIBRATING THE TIME AXIS AND INTENSITY LINEARITY OF A STREAK CAMERA

Norman H. Schiller, Queens, and Robert R. Alfano, Bronx, both of N.Y., assignors to Hamamatsu Corporation, Middlesex, N.J.

Filed May 27, 1982, Ser. No. 382,803
Int. Cl.³ H04N 7/18
U.S. Cl. 358—139 **9 Claims**



1. Apparatus for use in calibrating the time axis and intensity linearity of a streak camera over at least one time scale, said streak camera having an input slit, said apparatus comprising:

a. light means for producing a pulse of light,

b. at least one bundle of optical fibers, each bundle of optical fibers comprising a plurality of optical fibers of different lengths with the difference in lengths of the fibers in each bundle being uniform, the difference in length of the fibers in one bundle being different from the difference in length of the fibers in each other bundle, the fibers in each bundle being arranged so that one end thereof terminates in an input plane adapted to be positioned to receive said light pulse and the other end thereof terminates in an output plane adapted to be positioned at the input slit of the streak camera, and

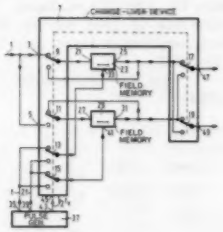
c. means for supporting said bundles of fibers,

d. whereby a pulse of light from said light means impinging on any one of said bundles at said input plane end will produce at the output plane end of said bundle a plurality of light pulses of equal intensity each delayed uniformly in time in proportion to the difference in length of the fibers.

4,435,728
FIELD FREQUENCY-DOUBLING CIRCUIT FOR A TELEVISION SIGNAL

Johannes G. Raven, and Marcellinus J. J. C. Annegarn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,545
Claims priority, application Netherlands, Feb. 9, 1981, 8100603
Int. Cl.³ H04N 5/02
U.S. Cl. 358—140 **6 Claims**



1. A field frequency-doubling circuit for a television signal having an input for the television signal whose field frequency must be doubled, a first and a second field memory, respectively, a change-over device switching at half the field frequency for writing information into the first and the second field memory, respectively, at a predetermined rate and reading the second and the first field memory, respectively, at a rate of substantially twice the write rate, and an output for the field frequency-doubled television signal, characterized in that the change-over device comprises a portion for supplying to a picture memory output of the circuit a signal which has been alternately delayed two field periods by the first and the second field memory, respectively.

4,435,729
TELEVISION RECEIVER WITH SELECTIVELY DISABLED ON-SCREEN CHARACTER DISPLAY SYSTEM

Leopold A. Harwood, Bridgewater, N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,884
Int. Cl.³ H04N 5/22
U.S. Cl. 358—183 **5 Claims**

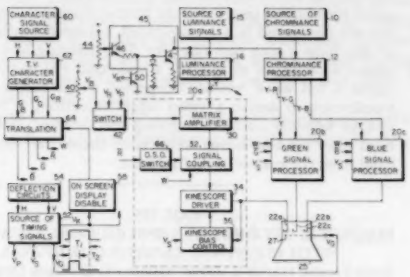
1. In a system for processing image representative video signals comprising an image component occurring during periodic image intervals and a blanking component occurring during periodic blanking intervals, said system including a kinescope for providing an image display in response to signals, including said video signals, applied thereto; apparatus comprising

a source of periodic switching signals occurring during said blanking intervals;

a character generator for providing auxiliary character representative signals to said kinescope during said video signal image intervals, said character generator being undesirably subject to producing false character signals during said blanking intervals; and

control means coupled to said character generator and re-

sponsive to said switching signals for automatically rendering said character generator inoperative to produce



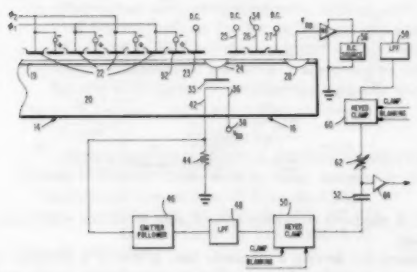
character signals including said false character signals during said blanking intervals.

4,435,730

LOW NOISE CCD OUTPUT

Sidney L. Bendell, Riverton, and Peter A. Levine, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 356,212
Int. Cl.³ H04N 3/14
U.S. Cl. 358—213 **8 Claims**



1. Apparatus for processing first and second video signals from first and second signal sources, said signals having opposite noise versus frequency characteristics, said apparatus comprising filtering means for filtering each of said signals with complementary low and high pass filters, respectively, to produce filtered signals having reduced noise, combining means for combining said filtered signals together; and

a pair of circuit means for clamping and blanking each of said video signals respectively.

4,435,731

TELEVISION RECEIVER DISABLING CIRCUIT

Ravadee Kliebphipat; Ronald E. Fernsler, both of Indianapolis, and James E. Hicks, New Palestine, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1981, Ser. No. 298,389
Int. Cl.³ H04N 5/44; H01J 29/70
U.S. Cl. 358—243 **13 Claims**

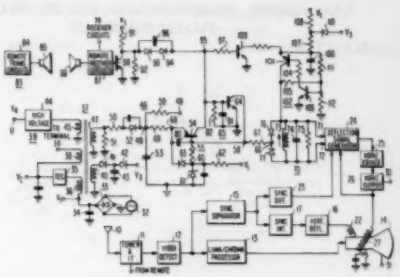
1. A television receiver disabling means comprising:

means for disabling a television receiver when said disabling means is energized;

means for detecting a receiver fault condition;

first means coupled to said fault detecting means for energizing said disabling means in the presence of a detected receiver fault condition, said first means incorporating a latch for maintaining said disabling means energized when said latch is set;

means for providing user activated receiver on and off command signals;



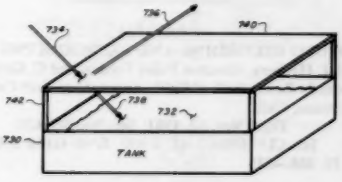
second means coupled to said disabling means and responsive to said receiver off command signals for energizing said disabling means in order to disable said television receiver, said second means incorporating means coupled to said first means for resetting said latch in response to one of said command signals when said latch is set.

4,435,732

ELECTRO-OPTICAL ILLUMINATION CONTROL SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Filed Jul. 16, 1980, Ser. No. 169,257
Int. Cl.³ H04J 5/64
U.S. Cl. 358—254 **37 Claims**



1. An illumination control system comprising:

an illumination source for generating source illumination;

an illumination filter for generating filtered illumination in response to the source illumination from said illumination source;

an electrical control circuit for generating an electrical control signal;

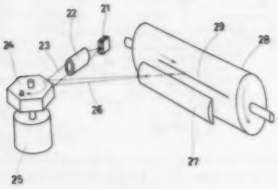
an illumination control device for controlling the filtered illumination from said illumination filter in response to the electrical control signal from said electrical control circuit; and

cooling means for conducting heat away from said illumination control device.

4,435,733
FLYING SPOT SCANNER FOR LASER PRINTER

Takao Tagawa, Kashihara, and Toshio Urakawa, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1982, Ser. No. 352,151
Claims priority, application Japan, Feb. 27, 1981, 56-29033
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—302 **11 Claims**



1. Apparatus for recording the information content of an electrical signal on the surface of a light-sensitive medium by means of a plurality of scan traces across said medium, said apparatus consisting essentially of:

a semiconductor laser diode for providing a light beam of high intensity modulated in accordance with the electrical signal supplied thereto, said semiconductor laser diode comprising a junction plane oriented in a first direction and emitting a beam having an elliptical cross section;

reflector means comprising a plurality of contiguous reflecting facets rotatable about a central axis;

means for rotating said reflector means about said central axis;

focusing lens means disposed between said semiconductor laser diode and said reflector means for focusing said elliptical beam and passing said elliptical beam to said reflector means;

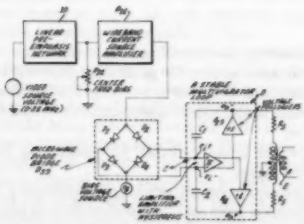
wherein said reflector means reflects said elliptical beam toward said medium, and rotation of said reflector means causes said beam to scan across said medium in a second direction orthogonal to said first direction; and

cylindrical lens means disposed between said reflector means and said medium and having a longitudinal axis parallel to said second direction for receiving said elliptical beam, for modifying the cross section of said elliptical beam into substantially a focused circular beam, and for directing said circular beam to a selected scan line on said medium.

4,435,734
FM VIDEO RECORDING AND REPRODUCING SYSTEM

David J. Hedberg, Ranchos Palos Verdes, and C. Gary Nilsson, Redondo Beach, both of Calif., assignors to VAS Corporation, Torrance, Calif.

Filed Nov. 12, 1981, Ser. No. 320,620
Int. Cl.³ H04N *5/91, 9/491, 5/76*; G11B *5/04*
U.S. Cl. 358—335 **4 Claims**

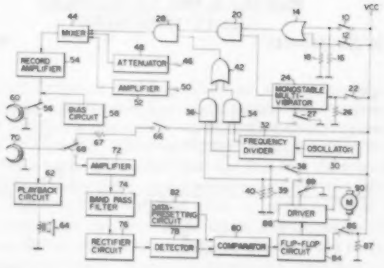


4. In a video reproducing system in which a video signal is converted into a wideband FM signal and impressed upon a medium, a discriminator for receiving the signal from said medium and converting it into a video signal corresponding to the original comprising a wideband balanced pulse discriminator including means forming a wideband balanced limiter amplifier to convert signals into a current square wave a balanced transformer coupled to the output of said limiting amplifier and connected in a double-ended, balanced configuration to also form a high pass filter for differentiating said current square wave signal to produce a wideband FM demodulated signal, a full wave rectifier connected to the output of said transformer to derive a video signal therefrom, a balanced voltage follower circuit for driving said rectifier, and a baseband filter for eliminating frequencies above the video baseband from the output of said rectifier.

4,435,735
MAGNETIC RECORDING-REPRODUCING APPARATUS WITH CONSTANT LENGTH CUE SIGNAL

Kenji Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 171,533, Jul. 23, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,187
Claims priority, application Japan, Aug. 1, 1979, 54-106677
Int. Cl.³ G11B *15/52, 27/28*
U.S. Cl. 360—74.4 **4 Claims**



1. A magnetic recording-reproducing apparatus which comprises:

means for driving a magnetic tape at one of a plurality of speeds during the recording or reproducing mode, and, during the fast forward or rewind mode, driving the magnetic tape at a higher speed than during the recording or reproducing mode;

means for recording a cue signal having a lower frequency than that of a sound signal on the magnetic tape during the recording mode with the sound signal, the cue signal having a frequency proportionate to the running speed of the magnetic tape and being recorded in a length of time inversely proportionate to the running speed of the magnetic tape; and

means for the reproducing the cue signal recorded on the magnetic tape during the fast forward or rewind mode.

4,435,736
ISOLATED MULTIPLE CORE MAGNETIC TRANSDUCER ASSEMBLY

Robert W. Herman, Laguna Beach, Calif., assignor to New World Computer Company, Inc., Irvine, Calif.

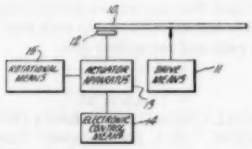
Continuation-in-part of Ser. No. 44,534, Jun. 1, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 295,105
Int. Cl.³ G11B *5/60, 5/20*
U.S. Cl. 360—103 **26 Claims**

1. A magnetic transducer assembly adapted for recording or retrieving information from a moving magnetic surface, comprising:

a slider of non-magnetic material having a slider bearing

surface adapted to be disposed adjacent to said moving magnetic surface, said slider bearing surface adapted to cooperate with said moving magnetic surface and a fluid within which said moving magnetic surface moves to form a fluid bearing between said slider bearing surface and said moving magnetic surface, said fluid bearing adapted to support said magnetic transducer assembly, and said slider having mounting surface means opposite said slider bearing surface for mounting said slider to suspension means; and

a plurality of magnetic cores each individually supported by said slider to substantially magnetically isolate each of said



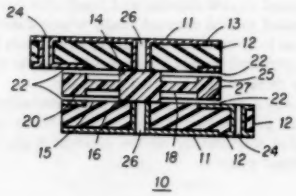
magnetic cores from the other of the magnetic cores, each of said magnetic cores including a core bearing surface adjoining said slider bearing surface and adapted to be disposed adjacent said moving magnetic surface, said core bearing surface adapted to cooperate with said moving magnetic surface and said fluid to form a fluid bearing between said core bearing surface of each of said plurality of cores and said moving magnetic surface, each of said core bearing surfaces further including a gap adapted to be proximate said moving magnetic surface when said magnetic transducer assembly is supported by said fluid bearing with respect to said moving magnetic surface.

4,435,737

LOW COST CAPACITIVE ACCELEROMETER

Russell F. Colton, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 16, 1981, Ser. No. 331,416
Int. Cl.³ G01P *15/125;* H01G *5/16*
U.S. Cl. 361—280 **12 Claims**



1. A semiconductor acceleration transducer comprising:

at least one first substrate means having an electrically conductive portion for forming a first capacitor plate; and

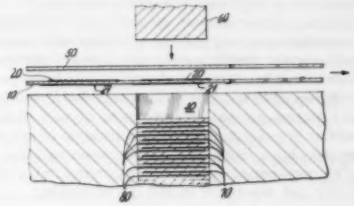
an acceleration-responsive semiconductor means coupled to said substrate means and spaced adjacent said electrically conductive portion for forming a second capacitor plate and being movable in response to acceleration to cause a change in capacitance between said first and second plates, said semiconductor means comprising a semiconductor element including a central post portion attached to said first substrate means, an elastic diaphragm portion circumferentially extending from said post portion and an acceleration-responsive mass ring portion circumferentially extending from said diaphragm portion.

4,435,738

MULTILAYER CERAMIC CAPACITORS

Flavil Barber, Jr., Simpsonville; Emmanuel E. Karam, Greenville; Richard Dunaway, Mauldin, and Ray L. Rogers, Williamston, all of S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 27, 1981, Ser. No. 267,443
Int. Cl.³ H01G *4/12, 13/00*
U.S. Cl. 361—321 **2 Claims**



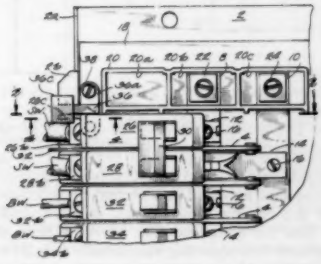
2. An unfired green ceramic capacitor body comprising a stack of separate green ceramic plates of the same thickness, alternate plates having opposing electrodes thereon and said alternate plates being separated by a plate of non-electroded green ceramic.

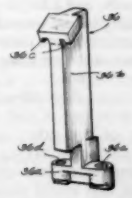
4,435,739

HOLD-DOWN BRACKET FOR PLUG-IN CIRCUIT BREAKER

Bertrum S. Shelvik, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 3, 1982, Ser. No. 373,913
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—346 **13 Claims**





1. In an electrical panelboard having a plurality of plug-in circuit breakers, the combination comprising:

a panel;

a mounting rail on said panel for mounting one end of said circuit breakers;

insulating means mounted on said panel;

a plurality of bus bars supported by said insulating means, said bus bars being transversely spaced with respect to

said mounting rail extending along said panel parallel to said mounting rail and said bus bars having first plug-in connector means spaced at intervals along their length;

a multi-pole main circuit breaker having a plurality of second plug-in connector means cooperably engagable with respective ones of said first plug-in connector means, one end of said multi-pole main circuit breaker being mounted to said mounting rail and said second plug-in connector means being engaged with respective ones of said first plug-in connector means, said main circuit breaker having wire receiving terminals for connecting said main circuit breaker to a source of electrical power; and

hold-down means secured to said panel, said hold-down means having a first portion overlying said mounting rail and a second portion overlying a forward portion of said main circuit breaker, said second portion being positioned with respect to said first portion such that force exerted on said second portion by movement of said main circuit breaker in a direction to effect separation of said first and second plug-in connector means causes said first portion to be compressed against said mounting rail, thereby resisting said movement of said circuit breaker.

4,435,740

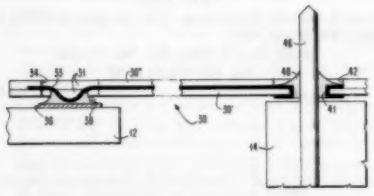
ELECTRIC CIRCUIT PACKAGING MEMBER

Bill F. Huckabee, Santa Cruz, and William L. Wright, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,573

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—398 **4 Claims**



1. A thin, flat compliant member for selectively interconnecting a first plurality of electrical pretinned connecting pads arranged in a first predetermined pattern on the surface of a ceramic substrate to a second plurality of pretinned electrical connecting pins arranged in a second predetermined pattern adjacent said ceramic substrate, said member comprising:

(a) a first flat compliant film having a third plurality of apertures corresponding substantially to said first plurality and arranged in said first predetermined pattern to permit registering each of said apertures with one of said electrical connecting pads, and a fourth plurality of other apertures corresponding to said second plurality and arranged in said second predetermined pattern to permit registering each of said other apertures concentric with one of said electrical connecting pins;

(b) a plurality of conductors affixed to said film, each of which extends from one of said apertures of said third plurality to one of said other apertures of said fourth plurality, each conductor having a first end portion including an opening therein concentric with a different said other aperture of said fourth plurality and a second end portion which extends over a different one of said apertures of said third plurality, each of said apertures of said first plurality having a dimension which corresponds substantially to the widest dimension of one of said pretinned connecting pads, the portion of each of said conductors that extends over said aperture having a width which is less than the width of said pad and substantially half the diameter of said aperture, said portion of said conductor which extends over said aperture being formed to present a bottom surface of said conductor below the bottom surface of said member to permit precise intimate contact with a predetermined one of said pretinned pads when said member is positioned accurately on said substrate to control the flow of solder from each pretinned connecting pad to only its associated conductor during gang soldering of said member to said substrate; and

(c) a compliant protective layer disposed over said conductors on said first flat compliant film to allow at least two spaced-apart apertures which are located at different corners of said first predetermined pattern to be visually aligned with associated pads so that the respective edges of each said aligned apertures are equidistant from the sides of said associated pads whereby each of said apertures of said first and second predetermined patterns are accurately aligned respectively with their associated connecting pads and connecting pins.

4,435,741

ELECTRICAL CIRCUIT ELEMENTS COMBINATION

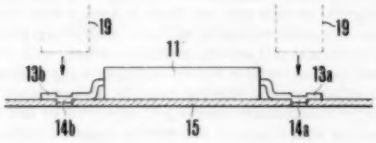
Masami Shimizu, Tokyo, and Masanori Uchidoi, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha

Filed Aug. 26, 1981, Ser. No. 296,571

Claims priority, application Japan, Sep. 3, 1980, 55-122174; Nov. 13, 1980, 55-162244[U]

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—401 **6 Claims**



1. A combination of an integrated circuit element and a printed circuit board which provides an electrical connection, comprising:

(a) an integrated circuit element having a plurality of external leads extended from sides thereof, wherein holes for positioning are provided at said external leads;

(b) a printed circuit board having an opening to embed said integrated circuit element and conductor patterns to be connected to said external leads, wherein the conductor patterns to be connected to said external leads having said holes provided therein have holes having the same diameters as those of said external leads; and

(c) whereby a positioning of said integrated circuit element and said printed circuit board is made based on the holes provided respectively on the external leads and on the conductor patterns.

4,435,742

ELECTROCHEMICAL TRANSISTOR STRUCTURE WITH TWO SPACED ELECTROCHEMICAL CELLS

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 117,176, Jan. 31, 1980, Pat. No. 4,332,003. This application Feb. 1, 1982, Ser. No. 344,891

Int. Cl.³ H01G *9/00*; B01J *17/00*; H01G *9/18*

U.S. Cl. 361—433 **5 Claims**

1. An electrochemical structure having a collector region, an emitter region and a base region which are arranged with respect to one another so as to facilitate transistor action and each of said collector emitter and base regions having electrodes in communication with reservoirs of an appropriate active species in electrically neutral form so that said electrochemical structures exhibits electrical characteristics and fea-

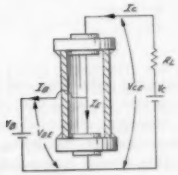
tures commonly known as transistor action and can be used to provide alternating current voltage, current and power gain;

said collector and emitter regions each containing liquid electrolyte with two coupled electrodes to form a collector and an emitter electrochemical cells, respectively, suitable to conduct said appropriate active species available from the reservoirs adjacent to said collector and emitter electrochemical cells;

said base region being an enclosed region which can take up the electrically active species in neutral form;

said emitter and collector electrochemical cells each having one electrode exposed to the active species in neutral form in said base region;

the other electrode of each of said emitter and collector



electrochemical cells being exposed to the reservoir of the active species in neutral form;

said electrochemical cells being adapted so that transistor action can occur when there is electrochemical withdrawal of the active species from the reservoir adjacent to said emitter electrochemical cell and there is injection of the active species into said base region, while simultaneously the action of said collector electrochemical cell will be to withdraw the active species injected into said base region and deliver it to the reservoir adjacent to said collector electrochemical cell; and

said reservoir adjacent to one electrode of each of said collector and emitter electrochemical cells shall, when the neutral form of the active species is a gas, be a space or a region for containing the gas.

4,435,743

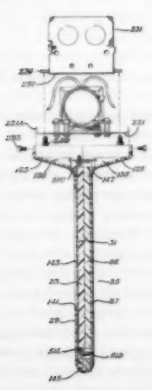
EDGE LIGHTED SIGN

George W. Plumly, 1601 Dakar Rd. W., Fort Worth, Tex. 76116

Filed Jun. 22, 1981, Ser. No. 275,613

Int. Cl.³ F21V *19/04*

U.S. Cl. 362—20 **39 Claims**



1. A panel to be illuminated comprising:

a light transmitting plate having a viewing side and an edge onto which light can be projected for transmission into said plate for viewing from said viewing side,

a plurality of sub-miniature incandescent light bulbs located close to said edge of said plate along its length at spaced apart positions for producing light when energized for projection onto said edge of said plate for transmission into said plate for viewing from said viewing side,

each of said bulbs being rated at a given voltage level,

power means for normally applying an operating voltage to said plurality of sub-miniature incandescent light bulbs at a voltage level significantly less than said given voltage level for normally energizing said bulbs at said operating voltage level significantly less than said given voltage level thereby increasing the lifetime of said bulbs over that obtainable if said bulbs were normally energized at said given voltage level,

emergency power means for applying an emergency voltage to said plurality of sub-miniature incandescent light bulbs in the event that said operating voltage fails,

said emergency voltage being at a level significantly greater than said given voltage level thereby increasing the brightness of said bulbs in the event of an emergency.

4,435,744

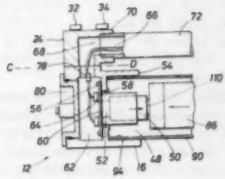
EXPLOSION-PROOF FLUORESCENT LIGHT FIXTURE

Salvatore V. Russo, Pearland, Tex., assignor to Pauluhn Electric Manufacturing Co., Inc., Pearland, Tex.

Filed Aug. 10, 1981, Ser. No. 291,259

Int. Cl.³ F21S *3/00*

U.S. Cl. 362—219 **8 Claims**



1. An explosion-proof lighting assembly comprising a terminal block and wire raceways for supplying power to a plurality of tubular lamps, first and second yoke members each for being supported to opposite ends of said raceways respectively and having a lower portion including means for supporting a plurality of lamps thereto, said yoke portion defining a first portion for engaging a raceway in explosion-proof sealing relationship and an area for engaging lamp support means in sealing relationship, the interior of each said yoke means comprising a wire channel communicating one said raceway to each portion of said yoke to which one said globe is to be supported, a plurality of end supports, each end support having an upper portion for mating with a yoke and a flange portion for receiving an end of a globe, each globe for surrounding a lamp, and for alignment in axial registration with another end support for receiving an opposite end of the globe said end support comprising a portion rearwardly disposed with respect to the said globe defining a compartment having a first wall including an end cap in releaseable, explosion-proof sealing relationship and in axial registration with said globe and to provide for access into said fixture, electrical connection means for coupling to conductor means in said raceway and for bearing against an end of lamp, said electrical connection means being removeably supported to said flange means and covering an aperture between said compartment and said flange means and in registration with said end cap through which a lamp is removeable when said electrical connection means is removed, said upper portion further having an opening for communicating said compartment with one said wire channel.

4,435,745

DEVICE FOR GENERATING SPECIFIC ELECTRICAL VOLTAGE VALUES FOR CONSUMERS ASSOCIATED WITH AN INTERNAL COMBUSTION ENGINE

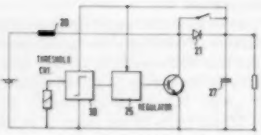
Hermann Eisele, Vaihingen; Martin Hill, Stuttgart, and Hartmut Schweizer, Korntal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,637

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110685

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **5 Claims**



1. A device for generating specific electrical voltage values for electrical consumers of an internal combustion engine having means to detect predetermined minimum voltages and having a voltage source and a voltage elevating circuit comprising,

an input and output voltage and includes a regulating means which has a threshold value and is connected such that the regulating means closes the switch to activate the voltage elevating circuit when the input voltage is below the threshold value, and such that the output voltage is regulated to a specific set-point value,

wherein the regulating means has a current limiting circuit with an output connected to the switch to limit current in the switch and a first comparator connected to receive the current limiting circuit output and connected to activate the switch according to the current limiting circuit output,

wherein the switch is connected to and controlled by an AND gate with an input side connected to the voltage source and the first comparator, wherein the voltage elevating circuit also includes: a second comparator connected to receive and compare the input voltage to a reference voltage, and a third comparator connected to receive and compare the output voltage to a reference voltage, and wherein the input side of the AND gate is also connected to the second and third comparators such that the switch is controlled via the AND gate by the voltage source and the first, second and third comparators, and

wherein the voltage elevating circuit is connected to the means to detect predetermined minimum voltages to be switched on at a predetermined minimum voltage.

4,435,746

INDUCTIVE REACTIVE VOLTAGE REGULATOR

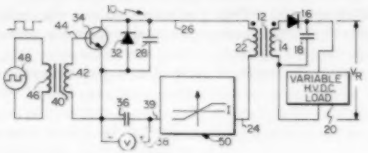
Ralph M. Barnett, Brownsville, Tex., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1982, Ser. No. 369,292

Int. Cl.³ H02M *3/335;* **H02P** *13/10*

U.S. Cl. 363—21 **13 Claims**

1. In a pulse-charged direct-current power supply apparatus, said apparatus comprising a secondary circuit, a primary circuit and a transformer having a secondary winding coupled to said secondary circuit and a primary winding coupled to said primary circuit, said secondary circuit comprising rectifying means coupled in series to said secondary winding, first charge storing means coupled across said secondary winding, and a direct current load subject to variable current draw, said load being coupled across said first charge storing means, said primary circuit comprising second charge storing means, switching means and third charge storing means, said second charge storing means and said third charge storing means being coupled in series with said primary winding, and said switching means being coupled across said third charge storing means and in series with said second charge storing means, said switching means including means for driving said switching



means at a predetermined duty cycle and frequency to generate a reversal in current through said primary circuit, said reversal in current causing a voltage pulse to appear across said transformer, an apparatus for regulating secondary voltage comprising a saturable reactor means coupled in series with said primary winding for bucking said voltage pulse in accordance with the current loading of said primary circuit.

4,435,747

HIGH VOLTAGE SUPPLY SYSTEM FOR MEDICAL EQUIPMENT

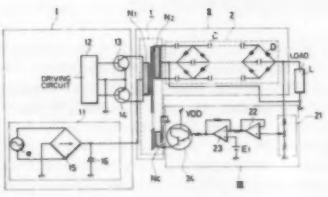
Shuhei Furuichi, Shiga; Toshiaki Ikeda, and Masakazu Suzuki, both of Kyoto, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation-in-part of Ser. No. 276,696, Jun. 23, 1981, abandoned. This application Dec. 22, 1982, Ser. No. 452,392

Claims priority, application Japan, Jun. 27, 1980, 55-88057

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—25 **1 Claim**



1. A DC high voltage generation system for medical equipment comprising:

a variable magnetic leakage transformer including primary, secondary and control windings;

a capacitor type multiple boosting circuit comprising a plurality of capacitors cascaded through diodes to each other, said capacitor type multiple boosting circuit being coupled to said secondary of said variable magnetic leakage transformer and forming a resonant circuit with said variable magnetic leakage transformer;

a driving circuit coupled to said primary winding of said variable magnetic leakage transformer for driving said system at a resonant frequency of the resonant circuit formed by said capacitor type multiple boosting circuit and said variable magnetic leakage transformer; and

a pulse-amplitude feedback control circuit coupled to said control winding and a load of said DC high voltage generation system for pulse-amplitude controlling an output voltage of said DC high voltage generation system, said pulse-amplitude feedback control circuit comprising:

a means for detecting a magnitude of said output voltage to said load;

a means for presetting a reference voltage;

a means for comparing said detected voltage with said reference voltage to produce a deviation voltage; and

control transistors coupled to said control winding to act as a constant current source which in response to said deviation voltage pulse-amplitude control said output voltage.

4,435,748

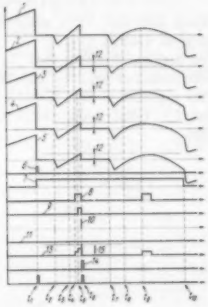
METHOD OF PULSED CONTROL OF HIGH-TENSION THYRISTOR RECTIFYING ARRANGEMENT AND SYSTEM FOR EFFECTING SAME

Rem A. Lytaev; Khristofor F. Barakaev; Igor P. Taratuta, and Sergei V. Krainov, all of Moscow, U.S.S.R., assignors to Vsesojuzny Elektrotekhnickesky Institut Imeni V.I. Lenina, Moscow, U.S.S.R.

Filed May 7, 1982, Ser. No. 375,717

Int. Cl.³ H02M *1/08*

U.S. Cl. 363—54 **4 Claims**



1. A method of pulsed control of a high-tension rectifying arrangement including thyristors and working as part of an n-phase converter, comprising the steps as follows:

a. applying at the beginning of the conduction interval of said arrangement a narrow pulse to said thyristors of said arrangement;

b. selecting a given number of monitored thyristors from said thyristors of said arrangement to measure on them the value of positive voltage in the forward direction or selecting a given number of monitored thyristor groups from said thyristors of said arrangement to measure on them the value of positive voltage in the forward direction;

c. selecting a present level exceeded by said value of positive voltage in the forward direction on said monitored thyristors or said monitored thyristor groups;

d. determining the points in time when said value of positive voltage in the forward direction on each of said monitored thyristors or on each of said monitored thyristor groups exceeds said preset level;

e. forming monitor signals at said points in time;

f. counting the number of said monitoring signals and selecting a given number of said monitor signals;

g. applying additional narrow control pulses to said thyristors of said arrangement at the point in time when said number of said monitor signals reaches said given number.

4,435,749

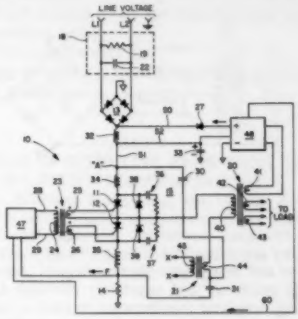
HIGH FREQUENCY INVERTER FAULT PROTECTION SYSTEM

Calvin E. Grubbs, Garland, Tex., assignor to Thomas Industries Inc., Louisville, Ky.

Filed Feb. 26, 1982, Ser. No. 352,955

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—58 **7 Claims**



1. In an inverter circuit including first and second control switching means connected in separate branches of a bridge circuit and energized by a line source and driven by gating signals from control logic means to conduct respectively in alternate half cycles to sustain oscillation and provide an inverter signal, said control logic means providing said gating signals to said first and second control switching means in timed relation with said inverter signal, said bridge circuit further including first and second balanced capacitors connected in separate branches of said bridge circuit and power transformer means connected in the diagonal branch of said bridge circuit and including a plurality of secondary windings, each coupled to an output device with at least one of said secondary windings coupled to a direct current power supply for energizing said control logic means, the frequency of oscillation of said inverter signal being determined by the capacitance of said first and second capacitors, the inductance of said power transformer means and a time delay provided by said control logic means, a fault protection system comprising:

detector circuit means including a resistor coupled to said control switching means and responsive to the current therein for disabling said control logic means when said control switching means current exceeds a predetermined value;

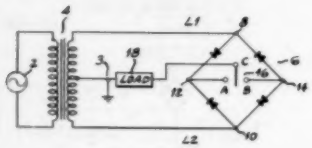
first resonant circuit means including first and second inductances and a capacitor connected in circuit with said first and second control switching means and said line source wherein the discharging and charging of said capacitor across said inverter circuit commutates said first and second control switching means to a non-conducting state following the disabling of said control logic means by said detector circuit means and wherein said first inductance is coupled to said first control switching means and said second inductance couples said second control switching means to said detector circuit means; and

conducting means coupling said line source to said control switching means and said first resonant circuit means for providing circuit isolation therebetween such that the resonant frequency of said first resonant circuit means is much greater than the charging rate of said capacitor by said line source and wherein said direct current power supply is coupled to the junction of said line source and said conducting means for continuously providing at least a predetermined minimum voltage across said first and second control switching means for turning off said first and second control switching means following the disabling of said control logic means.

4,435,750
RECTIFIED AC FREQUENCY CONVERTER

Herman P. Schutten; Robert W. Sackett, both of Milwaukee; Jan K. Sedivy, Elm Grove, and Michael E. Taken, Cedarburg, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 29, 1982, Ser. No. 403,249
Int. Cl.³ H02M 5/34
U.S. Cl. 363—177 7 Claims

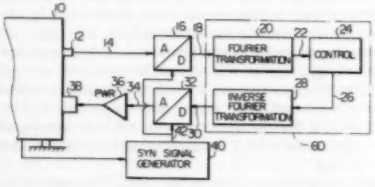


1. A frequency conversion technique for an AC signal, comprising rectifying said AC signal to a positively rectified AC signal and to a negatively rectified AC signal, and chopping said positively and negatively rectified AC signals by alternating switching therebetween to yield a switched output waveform of given frequency having a positive half cycle following a given segment of said positively rectified AC signal, and having a negative half cycle following a given segment of said negatively rectified AC signal.

4,435,751
VIBRATION/NOISE REDUCTION DEVICE FOR ELECTRICAL APPARATUS

Yasuro Hori, Katsuta; Minoru Kanoi, Ibaraki; Kazuyuki Seino, and Syuya Hagiwara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,814
Claims priority, application Japan, Jul. 3, 1980, 55-89979
Int. Cl.³ H04B 15/00
U.S. Cl. 364—574 33 Claims



1. A device for reducing vibrations of an electrical apparatus comprising;

sensor means for sensing said vibrations generated by said electrical apparatus to produce a first analog time-domain signal,

analog-to-digital converter means for converting said first analog time-domain signal to a corresponding first digital time-domain signal,

Fourier transformation means for Fourier-transforming said digital time-domain signal to produce a first digital frequency-domain signal,

control means responsive to said first digital frequency-domain signal to produce a vibration-reducing second digital frequency-domain signal, said control means including first, second and third memory means, comparing means and control signal generating means, wherein a portion of said first digital frequency-domain signal belonging to a (m+1)th time section of a unit time interval T is applied to said first memory means and stored therein while a portion of said first digital frequency-domain signal belonging to a m-th time section of the unit time period T is stored in said second memory means, wherein said comparing means compares the contents of said first, and second memory means and said control signal generating means responds to the compare result of said comparing means to modify a portion of said second digital frequency-domain signal previously produced based on the previous compare result and stored in said third memory to produce a next portion of said second digital frequency-domain signal, and wherein the contents of said first, second and third memory means are updated each time when said control signal generating means produces said modified second digital frequency-domain signal portion,

inverse Fourier transformation means for inverse-Fourier-transforming said second digital frequency-domain signal to produce a second digital time-domain signal,

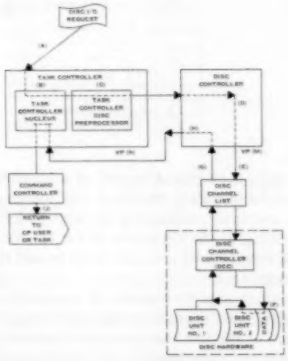
digital-to-analog converter means for converting said second digital time-domain signal to a corresponding second analog time-domain signal,

means for amplifying said second analog time-domain signal, and applying vibrations corresponding to said amplified second analog time-domain signal to said electrical apparatus.

4,435,752
ALLOCATION OF ROTATING MEMORY DEVICE STORAGE LOCATIONS

Wayne Winkelman, Leander, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 413,461, Nov. 7, 1973, abandoned, which is a continuation of Ser. No. 252,708, May 12, 1972, abandoned. This application Apr. 9, 1980, Ser. No. 138,783
Int. Cl.³ G06F 3/06, 13/04, 13/08
U.S. Cl. 364—200 8 Claims



1. A digital computer system having a control means for allocating memory space for storing a data file in at least one cyclic memory wherein said cyclic memory includes at least one data storage device comprising contiguous storage elements, said cyclic memory being partitioned into a plurality of data storage regions and wherein each of said data storage regions is also partitioned into a plurality of data storage subregions with all subregions within a given region being assigned equal storage capacity of contiguous storage elements and with subregions of different regions being assigned different storage capacities of said contiguous storage elements comprising:

(a) means for generating a list for all data storage subregions of said storage device including a beginning absolute address of each subregion;

(b) means for ordering the list of subregions in order of

decreasing memory capacity, said subregions being grouped in their respective regions;

(c) means for indicating the storage capacity and availability of each said subregion group;

(d) first storage means for storing said ordered list as a table, wherein said table includes with each subregion entry, the indicia of the storage capacity and availability of the respective subregions;

(e) means for sequentially searching said table including comparison means for comparing the storage capacity of each available subregion with the memory space required for the data field to be stored in said cyclic memory system;

(f) means for assigning and storing the data file to be stored in the first available subregion having the smallest available storage capacity which will completely contain the data file to be stored, and when no such subregion is available, including means for assigning and storing at least part of the data file to be stored in the first available subregion whose storage capacity is less than or equal to the memory space required for the part of the data file in accordance with the result of the comparison by said comparison means; and

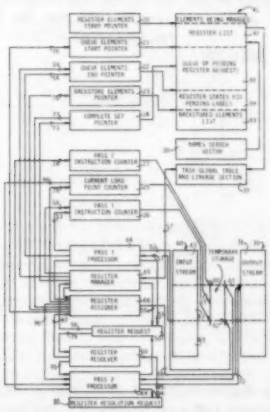
(g) means for reinitiating operation of said searching means until the comparison means indicates an absence of any portion of a data file that has not been stored.

4,435,753

REGISTER ALLOCATION SYSTEM USING RECURSIVE QUEUING DURING SOURCE CODE COMPILATION

John R. Rizzi, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,900
Int. Cl.³ G06F *9/00, 9/30, 9/44*
U.S. Cl. 364—200 **6 Claims**



1. A method of operating a computing system having a main storage and a plurality of different classes of registers to assign registers to requests serially referenced in an input instruction stream for quantities to be in a register, so as to improve utilization of the registers during execution of a compiled instruction stream, comprising the steps of:

(1) during a serial scan of the input instruction stream, identifying register usage for quantities, including (a) quantities referenced in the input instruction stream which need to be assigned to a register and (b) quantities referenced in the input instruction stream which are either assigned to a register or logged to a set of register quantities awaiting assignment to a register;

(2) upon identifying during step (1) a first quantity which needs to be assigned to a register, logging the first quantity to the set of register quantities awaiting assignment to a register with a control count indicative of the total number of registers for which the first quantity is not a candidate;

(3) upon identifying during step (1) a second quantity either assigned to a register or logged to the set of register quantities awaiting assignment to a register,

incrementing the control counts of quantities in the set of register quantities awaiting assignment to a register which are candidates for the same registers as the second quantity, and

testing for complete sets; and

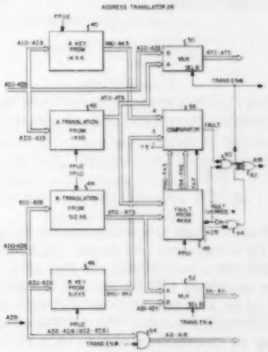
(4) assigning a register to those quantities for which a complete set is detected.

4,435,754

METHOD OF SELECTING PROM DATA FOR SELECTIVE MAPPING SYSTEM

Yiu T. Chow, Kowloon, Hong Kong, and Thomas J. Gilligan, Rolling Hills Estates, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jun. 30, 1981, Ser. No. 279,234
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **13 Claims**



1. A computer program for assigning data states to stores defining mapping relationships in a mapping system mapping input states to output states and which assigns each input state to an A superstate within an A group of superstates and to a B superstate within a B group of superstates, each superstate including a plurality of input states, the computer program comprising the steps of:

assigning in succession a plurality of B superstates, each having at least one input state which is to be mapped included therein, to a BK by BT B map having a plurality of BK states and a plurality of BT states orthogonal to and intersecting each of the BK states with not more than a predetermined maximum number of input states to be mapped being assignable to any given BT state, the B superstates being assigned to the B map with at most one B superstate assigned to any given Bk, BT intersection and being preferentially assigned to a BT state having a greatest number of vacancies available to receive input states to be mapped; and

assigning in succession a plurality of A superstates, each having at least one input state which is to be mapped included therein, to an AK by AT A map having a plurality of AK states and a plurality of AT states orthogonal to and intersecting each of the AK states with not more than a predetermined maximum number of input states to be mapped being assignable to any given AT state, the A superstates being assigned to the A map with at most one

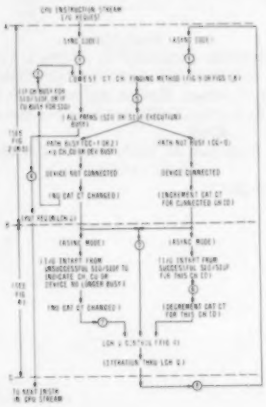
A superstate assigned to any given Ak, AT intersection and with each successive A superstate being preferentially assigned to an AT state having the smallest number of vacancies available to receive input states which are to be mapped.

4,435,755

BALANCED CHANNEL FINDING METHOD

Allan S. Meritt, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,991
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **20 Claims**



1. A method in a data processing system for quickly finding a data path for a requested I/O device, the data path including a channel path and a control unit, the data path being provided between the requested I/O device and a main storage under the control of an I/O request from a central processing unit (CPU) to a channel processor, the method comprising:

generating an outstanding request (CAT) count for each channel path useable by the system,

obtaining a set of channel path identifiers (CH IDs) for all channel paths capable of connecting to the requested I/O device,

finding a candidate channel path identifier (CH ID) for an available CH ID having the lowest CAT count in the set provided by the obtaining step,

attempting to connect the requested I/O device with the candidate channel path CH ID found by the finding step to obtain a data path,

repeating the finding step if the attempting step is unsuccessful in connecting the candidate channel path to a data path by finding another candidate channel path.

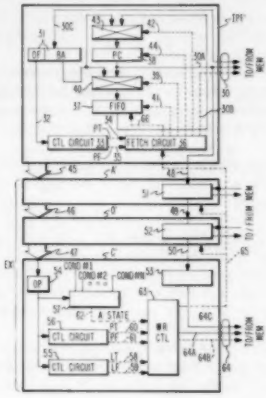
4,435,756

BRANCH PREDICTING COMPUTER

Hanan Potash, La Jolla, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 3, 1981, Ser. No. 326,837
Int. Cl.³ G06F *9/42*
U.S. Cl. 364—200 **9 Claims**

1. An improved digital device including a memory means for storing a plurality of instructions arranged as a program with conditional branch instructions at respective locations in said program specifying conditions to be tested; an instruction prefetch means and an instruction execute means for respectively fetching and executing different instructions of said program at the same time in a pipelined fashion; said conditional branch instruction at each of said locations further having multiple encodings which predict the state of the condition to be tested; and a control means for detecting when said prefetch means has fetched one of said conditional branch



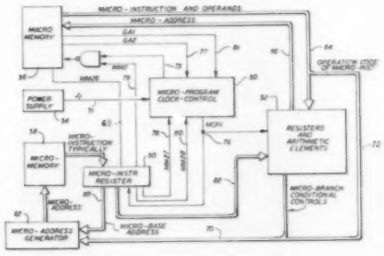
instructions and for fetching the next instruction based on the predicted state of the condition to be tested and encoded in said fetched conditional branch instruction.

4,435,757

CLOCK CONTROL FOR DIGITAL COMPUTER

John W. Pross, Jr., Newfoundland, N.J., assignor to The Singer Company, Little Falls, N.J.

Continuation of Ser. No. 60,259, Jul. 25, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,053
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **1 Claim**



1. In a digital computer including: a central processor; a main memory; and a micro memory, said micro memory containing a number of micro instructions for specifying program steps, a master clock for controlling the timing of the digital computer comprising:

a. an oscillator providing, as an output, a pulse train having pulses spaced at a basic fixed incremental time period;

b. a master clock output stage having a data input and a clock input and an output providing pulses, said clock input coupled to the output of said oscillator, said output stage responsive to provide the data at its input to its output in response to the input at its clock input;

c. timing means having said output of said oscillator as an input and providing a data input to said master clock output stage, the output of said timing means being a pulse train having pulses spread at a multiple of said basic fixed integral incremental time period which is equal to a mini-

mum interval corresponding to the shortest time needed to perform a program step;

d. adding means having as input signals forming part of a micro instruction and responsive thereto to add, to said minimum interval, increments equal to said basic fixed incremental time period when another part of said micro instruction calls for a program step requiring more than said minimum interval, the interval established after addition being approximately equal to the time required to perform said program step;

e. means associated with said main memory for providing a first signal indicating that the memory is ready to be read and a second signal indicating that data from the memory is available; and

f. means associated with said timing means having said signals as inputs and responsive to said first signal to interrupt said master clock output stage and prevent further output pulses from said master clock output stage and to said second signal to re-initiate generation of clock pulses by said master clock output stage.

4,435,758

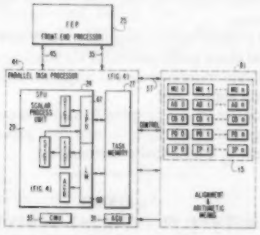
METHOD FOR CONDITIONAL BRANCH EXECUTION IN SIMD VECTOR PROCESSORS

Raymond A. Lorie, and Hovey R. Strong, Jr., both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 129,148, Mar. 10, 1980, abandoned. This application Aug. 13, 1982, Ser. No. 407,842

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **3 Claims**



1. A two-phase method for controlling the execution of a program consisting of a single entrance, single exit (SESE) program instruction sequences on a single instruction, multiple datastream (SIMD) machine during a second phase, which SESE instruction sequences were previously conditioned from an ordinary program instruction sequence on a single instruction, single datastream (SISD) machine during a first phase,

said SIMD machine includes an array of parallel processors; means for applying independent datastreams to counterpart processors, each processor having an activity mask (active, inactive); and a control unit for applying the program to the processors to interact with the data and for regulating the activity state of each processor by altering its activity mask contents, wherein:

during the first phase, the steps of:

(a) compiling an ordinary program and decomposing it into SESE instruction sequences, the last instruction in each sequence being either an unconditional or conditional branch;

(b) priority ordering the sequences according to a depth ordering convention and assigning sequence label numbers thereto linearly; and

(c) inserting either a ELSE or JOIN instruction at the beginning of sequences selected according to a first predetermined convention; and

during the second phase, the steps of:

(d) causing a SESE sequence processed during the first phase to be executed on one or more processors of an SIMD machine in parallel; and causing the designation of the next executable SESE sequence as a function of the matching or mismatching of the SESE sequence targets of the branches of the sequence currently being executed on one or more processors according to a second predetermined convention;

(e) upon occurrence of a branch instruction, ascertaining the targets and, if there does not exist a target to a successful conditional branch, transferring control to the unique target, otherwise transferring control to the target of the successful conditional branch and masking off as inactive the processors corresponding to the target of the unsuccessful conditional branch;

(f) upon the occurrence of an ELSE instruction in said current SESE sequence as applied to the SIMD machine, ascertaining the next SESE target sequence having the lowest priority order number; masking on into an active state each inactive processor awaiting execution of the ascertained target SESE sequence; and masking off into an inactive state all other processors waiting to execute other SESE sequences; or

(g) upon the occurrence of a JOIN instruction in said current SESE sequence as applied to the SIMD machine, masking on into an active state those inactive processors waiting to execute SESE sequences having a priority order number the same as that of the SESE sequence currently being executed by the SIMD machine.

4,435,759

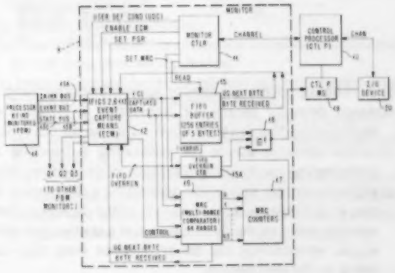
HARDWARE MONITOR FOR OBTAINING PROCESSOR SOFTWARE/HARDWARE INTERRELATIONSHIPS

Richard I. Baum, La Grange, and Frederick E. Sakalay, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,530

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—200 **22 Claims**



1. A monitor for obtaining measurement data on the software/hardware operation of a data processing system having a processor and a main storage, the processor having an instruction unit with an instruction address register for indicating the address of each instruction being executed by the processor, the processor having latches for registering the occurrence of events in the processor resulting from its execution of an instruction; the monitor comprising:

an event capture switch having a plurality of inputs connected to a set of latches of the processor to be monitored, some of the latches being activated aperiodically in time,

means for presetting the event capture switch to select one of its inputs (representing a preset type of event) as its output, the occurrence of an output signal from the event capture switch being a trigger signal,

capture register means,

means for capturing current input signals by connecting an output of the instruction address register to the capture

register means upon an occurrence of the trigger signal to store an instruction address then being provided by the instruction address register as the address of the instruction causing the trigger signal,

whereby a software operation in the system is related to a hardware operation in the system by the monitor selecting only the addresses of instructions in executing software causing the occurrence of predetermined types of hardware event to provide a required set of captured addresses.

4,435,760

RUNNING POSITION INDICATOR APPARATUS

Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki; Koji Numata, Toyokawa, and Susumu Urano, Oobu, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

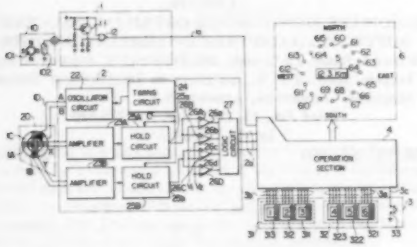
Filed Feb. 4, 1981, Ser. No. 231,441

Claims priority, application Japan, Feb. 8, 1980, 55-15172

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ G06F *15/50*; G09B *29/10*

U.S. Cl. 364—444 **9 Claims**



1. A running position indicator apparatus comprising:

distance detector means for generating a distance signal representing the distance covered by an automobile;

direction detector means for generating a direction signal representing the running direction of the automobile;

destination setting means for generating a destination direction signal representing the angle of the direction from the starting point to the destination and a destination distance signal representing the linear distance from the starting point to the destination;

operation means for calculating the vectorial value from the starting point to the destination in response to said destination direction signal and said destination distance signal, calculating the vectorial value from the starting point to the present position from said distance signal and said direction signal, subtracting the vectorial value from the starting point to the present position from the vectorial value from the starting point to the destination thereby to determine a vectorial value from the present position to the destination, and producing a signal representing the direction from the present position to the destination and a signal representing a linear distance from the present position to the destination; and

indicator means for indicating data on the linear distance from the present position to the destination and data on the direction from the present position to the destination in the same indication section in response to the output signal from said operation means.

4,435,761

DATA PROCESSING APPARATUS CAPABLE OF TRANSFERRING SERIAL DATA WITH SMALL POWER CONSUMPTION

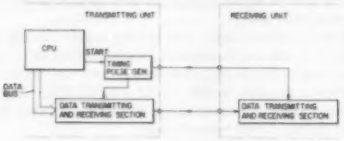
Manabu Kimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,874

Claims priority, application Japan, Oct. 8, 1979, 54-129714

Int. Cl.³ G06F *1/04, 13/00*; G11C *7/00*

U.S. Cl. 364—200 **10 Claims**



4. Data processing apparatus comprising:

a data processing means which executes a programmed process and generates a data transfer initiating signal and a signal for halting execution of said programmed process,

a data transfer means coupled to said data processing means for transferring data processed by said data processing means to a receiving unit,

a clock pulse generator for generating a clock pulse,

means for sending said clock pulse to said data processing means,

a first control means coupled to said sending means for inhibiting the sending of said clock pulse to said data processing means in response to said signal for halting execution,

a second control means coupled to said data transfer means and said clock pulse generator for sending said clock pulse to said data transfer means in response to said data transfer initiating signal, and

a third control means coupled to said first control means for sending said clock pulse to said data processing means in response to data transfer termination.

4,435,762

BUFFERED PERIPHERAL SUBSYSTEMS

Charles A. Milligan, St. David; Edwin R. Videki, II, and Winston F. Yates, both of Tucson, all of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,274

Int. Cl.³ G06F *9/18*

U.S. Cl. 364—200 **22 Claims**

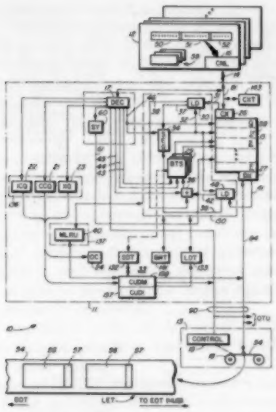
1. The machine-implemented method of buffering data signals between data signal records and a data source-sink, the machine-implemented steps of:

receiving data signal sets (records) by a volatile data buffer having plural data storage registers for later recording on a record member in a given one of said signal recorders;

initially operating the data source-sink as if the received signal sets were in fact recorded by said given one data signal recorder while in fact said received signal sets remain in the said volatile buffer; and

detecting the number of signals contained in a first received signal set (length) and if less than a predetermined length, storing all signals in said buffer before recording said received signal set and each of any ensuing received signal sets having less than said predetermined length on said record member in said one data signal recorder and upon detecting any received signal set having a number of signals greater than said predetermined number, actuating said given one data signal recorder and said volatile data buffer to receive signal sets and to begin recording all of the ensuing received signal sets on said record member in said given one data signal recorder before the entire signal

set has been completely received by said volatile data buffer such that said volatile data buffer acts as a rate



changing buffer whereby for signal sets longer than said predetermined number the data source-sink does not operate in the manner set forth in said initial operating step.

4,435,763

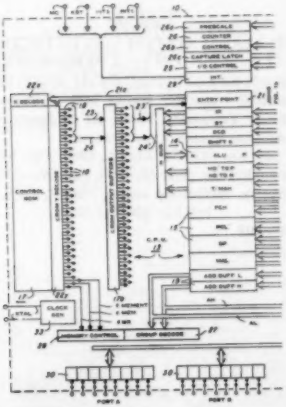
MULTIPROGRAMMABLE INPUT/OUTPUT CIRCUITRY

Jeffrey D. Bellay; Robert C. Thaden; John W. Hayn, and Kevin C. McDonough, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,957

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **25 Claims**



1. An electronic digital processor system including a single integrated circuit having input/output circuitry comprising:

a plurality of input/output data ports each having a plurality of bit pads and each having a separate address, at least two of said ports containing: receiving means to receive bit data from a bit pad; transmitting means to transmit bit data to said bit pad; control and interconnect circuitry connected to said receiving and said transmitting means of each of such ports to define a configuration that permits one port to transmit input data and to receive output data from said bit pads of another of such ports and respond to said address of said another port to send input data to and receive output data from within said intergrated circuit thereby allowing said control and interconnect circuitry of said another port to be used to transmit and receive control signals;

a data bus within said integrated circuit connected to said control and interconnected circuitry, to said receiving means and to said transmitting means of each of said ports.

4,435,764

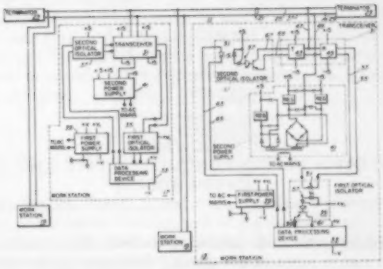
COMPUTER NETWORK HAVING A SINGLE ELECTRICALLY CONTINUOUS BI-DIRECTIONAL BUS

Hussein T. El-Gohary, Harvard, Mass., assignor to Data General Corp., Westboro, Mass.

Filed Aug. 6, 1981, Ser. No. 290,588

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **9 Claims**



1. A computer network comprising:

(a) an electrically continous communications bus,

(b) a plurality of spatially separated computer work stations distributed along said bus, each computer work station including:

(i) a transceiver connected to said bus, said transceiver including a transmitter for transmitting a signal onto said bus and a receiver for receiving a signal communicated onto said bus,

(ii) a data processing device,

(iii) first optical isolation means for coupling said receiver to said data processing device,

(iv) second optical isolation means for coupling said transmitter to said data processing device,

(v) a first power supply for supplying operating power to said data processing device and said first optical isolation means, and

(vi) a second power supply for supplying operating power to said transceiver and said second optical isolation means, said second power supply means being coupled to said communications bus and being floating.

4,435,765

BANK INTERLEAVED VECTOR PROCESSOR HAVING A FIXED RELATIONSHIP BETWEEN START TIMING SIGNALS

Keiichiro Uchida, Yokohama; Hiroshi Tamura, Kawasaki; Tetsuro Okamoto, Machida, and Shigeaki Okutani, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1981, Ser. No. 322,717

Claims priority, application Japan, Nov. 21, 1980, 55-164100; Nov. 26, 1980, 55-166164

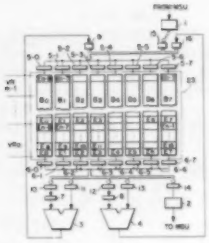
Int. Cl.³ G06F *9/18*

U.S. Cl. 364—200 **9 Claims**

1. A data processing system, having a plurality of processing classes specified by vector processing instructions, where a plurality of vector registers each comprising a plurality of elements are provided between a main memory unit and an operational unit, required data is transferred to said vector registers from the main memory unit and then held therein, and

in the operational unit various processings, such as logical operations, are carried out by sequentially accessing the elements within said vector registers, said data processing system comprising:

a plurality of memory banks to which access can be made independently, respectively, and which include said vector registers, the comprised elements of each vector register, respectively, are interleaved and thus located in different memory banks, each element of each vector register is respectively associated with a number representing that element's position within its comprising vector register, and the elements of different vector registers but having the same associated number are arranged in the same memory bank; and



timing generation means, operatively connected to said vector registers, for starting the access by the operation unit to a series of elements of said vector registers with a start ready timing signal which is specified for and dependent on each of the classes of processing, respectively, the processing classes being divided into an add/multiply class and a load/store class, the start ready timing signals comprise a plurality of first common timing signals which are assigned as vector register start timing signals for the add/multiply class, and a plurality of second common timing signals different from said first common timing signals and which are assigned as vector register access start timng signals for the load/store class, so that each of said vector registers operates at timing dependent on the class associated with the start ready timing signal.

4,435,766

NESTED RESOURCE CONTROL USING LOCKING AND UNLOCKING ROUTINES WITH USE COUNTER FOR PLURAL PROCESSES

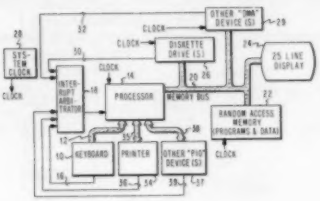
Judith G. Haber; Kenneth L. Jeffries, and Paul J. Kilpatrick, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

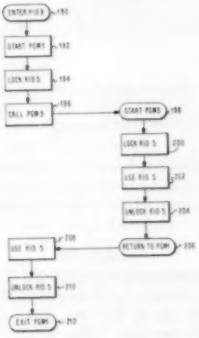
Filed Jun. 16, 1981, Ser. No. 274,113
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—300 **8 Claims**

1. A method of controlling a process lock on a resource, said method comprising:

nesting lock requests within a number of programs comprising a process;

maintaining said process lock through incrementing and decrementing a use counter from the initial process lock, during execution of a program, and calling up other programs within said process until said use counter is restored to its initial state prior to releasing said initial process lock.



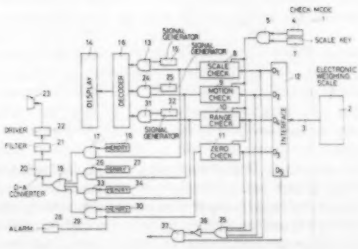


4,435,767

ERROR ALARM SYSTEM FOR DETECTING AN ABNORMAL CONDITION IN A PERIPHERAL SYSTEM OF AN ELECTRONIC CASH REGISTER

Hiroshi Nakatani; Masahide Ishida, both of Yamatokoriyama, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 147,271, May 6, 1980, Pat. No. 4,325,441.
This application Jun. 26, 1981, Ser. No. 277,687
Claims priority, application Japan, May 7, 1979, 54-56125
Int. Cl.³ G06F *3/16*
U.S. Cl. 364—405 **2 Claims**



1. A combined electronic cash register and peripheral system comprising:

an electronic cash register; and

peripheral means electrically interconnected to said cash register via a cable for monitoring a desired external con-

dition as well as abnormal conditions of said peripheral means;

said electronic cash register including,

interface means responsive to the output of said peripheral means on said cable for decoding said information provided thereon and supplying said information to a plurality of outputs, one of said plurality of outputs being an external condition value output, the remainder of said outputs being abnormal conditions monitor outputs,

abnormal condition evaluation means connected to at least one of said abnormal condition monitor outputs for determining whether an abnormal condition exists and producing an abnormal condition detection output associated with the abnormal condition detected,

abnormal condition display signal generator means responsive to said associated abnormal condition detection output for developing a display signal indicative of said abnormal condition,

means responsive to the display signal produced by said display signal generator means for visually displaying said display signal,

a plurality of audible condition memories, each said memory being associated with one of said abnormal condition monitor outputs and having a speech synthesized representation of the associated abnormal condition stored therein,

means for decoding the speech synthesized representation stored in a selected said memory into an analog audio waveform,

means responsive to a said associated abnormal condition detection output for enabling the passage of the speech synthesized representation stored in a selected said memory to said means for decoding, and

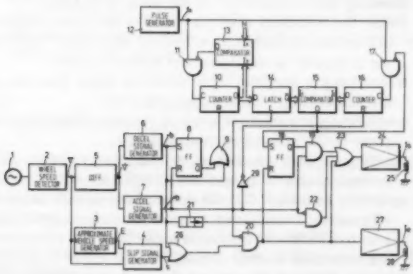
transducer means responsive to said means for decoding for producing an audible speech representation of said abnormal condition.

4,435,768

SKID CONTROL SYSTEM

Tetsuro Arikawa, Kanagawa, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Feb. 3, 1981, Ser. No. 231,095
Int. Cl.³ B60T *8/08*
U.S. Cl. 364—426 **11 Claims**



1. A skid control system for a vehicle having at least one wheel and a brake for the wheel comprising:

(a) wheel speed detecting means for providing an output signal representative of the rotational speed of said wheel with respect to the vehicle;

(b) differentiating means for differentiating said output signal of the wheel speed detecting means and providing an output signal representative of acceleration or deceleration of said wheel;

(c) a deceleration signal generator connected to said differentiating means, said deceleration signal generator generating a deceleration signal when the output signal of said differentiating means exceeds predetermined threshold deceleration;

(d) an acceleration signal generator connected to said differentiating means, said acceleration signal generator generating an acceleration signal when the output signal of said differentiating means exceeds a predetermined threshold acceleration;

(e) brake relieving means for decreasing the brake pressure to the brake for said wheel in response to the deceleration signal of said deceleration signal generator;

(f) first brake control means for maintaining the brake pressure to the brake for said wheel constant, or gradually increasing the brake pressure to the brake for said wheel, in response to the acceleration signal of said acceleration signal generator; and

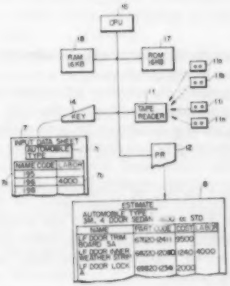
(g) second brake control means for rapidly increasing the brake pressure to the brake for said wheel for a predetermined time in accordance with the slope of the output signal of said differentiating means within the time when said acceleration signal generator generates the acceleration signal.

4,435,769

PORTABLE TYPE AUTOMOBILE REPAIR ESTIMATE ISSUING DEVICE

Susumu Nagano, Tokyo; Seiichi Iruya, Saitama; Yoshinori Yasuda, and Tomoaki Makino, both of Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Japan Audatex Co., Ltd., both of Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,475
Claims priority, application Japan, Mar. 15, 1980, 55-34939
Int. Cl.³ G06F *3/12, 15/06;* **G11C** *15/02*
U.S. Cl. 364—464 **9 Claims**



1. A portable type automobile repair issuing device comprising: memory means in which at least name coded data corresponding to automobile part names, name data corresponding to said automobile part names, data representing automobile types, and part data corresponding to automobile parts are stored; input means for inputting selected name coded data entries corresponding to said automobile part names and data representing an automobile type; central processing means; printing means for printing an automobile repair estimate in which the part data stored in said memory means is extracted selectively according to name coded data entries and said data representing said automobile type applied to said central processing means to provide estimation data, said printing means printing an estimate according to said estimation data; said memory means being provided with a first file for storing said part data other than said name data and a second file for storing said name data corresponding to said automobile part names;

said central processing means, according to each name coded data entry applied to said central processing means and said data representing said automobile type, combin-

ing corresponding part data stored in said first file and corresponding name data stored in said second file to provide estimation data,

said printing means printing an estimate according to said estimation data.

4,435,770

VIBRATION DIAGNOSING METHOD AND APPARATUS FOR A ROTARY MACHINE

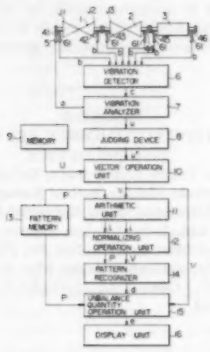
Koki Shiohata, Ibaraki; Fumio Fujisawa, Mito; Motohiro Shiga, Hitachi; Kazuo Sato, Kitaibaraki; Motoji Ohmori, Hitachi, and Masakazu Takasumi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,517

Claims priority, application Japan, Mar. 19, 1980, 55-34032

Int. Cl.³ G06F *15/46*; G01N *29/00*

U.S. Cl. 364—508 **14 Claims**



1. An apparatus for diagnosing a vibration in a rotor of a rotary machine comprising:

means for sensing the number of rotations of the rotor and providing an output indicative thereof;

vibration detecting means for detecting vibration at a plurality of measuring points disposed at intervals along a direction of the rotor shaft when the rotor is rotating and providing outputs representative thereof;

vibration analyzer means responsive to the outputs of the vibration detector means and the rotation sensor means for extracting vibration components synchronized with the number of rotations of the rotor at the plurality of measuring points;

comparing means for comparing the extracted vibration components with reference values therefor corresponding to normal vibration of the rotor for determining that the detected vibration is abnormal when at least one of the extracted vibration components exceeds the corresponding one of the reference values therefor and that the detected vibration is normal when all of the extracted vibration components do not exceed the corresponding reference value therefor, the comparing means providing an output of the extracted vibration components when the detected vibration is abnormal;

calculating means for calculating abnormal vibration components in accordance with the output of the extracted vibration components and predetermined values representative of respective rotor vibration components in a normal state of the rotor and providing an output of abnormal vibration components; and

pattern comparing means for comparing a pattern of amplitude values of the abnormal vibration components with patterns of previously determined vibration amplitude values at the respective measuring points when an unbalance is provided at different positions of the rotor for determining an unbalance originating position in the rotor according to a selected one of the predetermined unbalanced vibration patterns which is the most similar to the abnormal vibration pattern.

4,435,771

SYSTEM FOR NUMERICALLY CONTROLLING A MACHINE TOOL

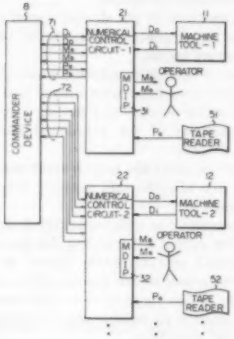
Ryoichiro Nozawa, Tokyo, and Nobuyuki Kiya, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,596

Claims priority, application Japan, Apr. 4, 1980, 55-43446

Int. Cl.³ H02M *1/06*

U.S. Cl. 364—474 **5 Claims**



1. A method for numerically controlling a plurality of machine tools by means of a computer connected in common to a plurality of numerical control circuits, each of which is connected to a different one of said machine tools and each of which has a manual data panel, the operation of said method comprising the steps of:

transmitting from the computer to a numerical control circuit a program editing mode signal;

deciding first whether or not the mode is suitable;

under the condition that the result of the first decision is affirmative, transmitting a manual input data (Ma) from the computer to the numerical control circuit;

transmitting a program input awaiting signal from the numerical control circuit to the computer;

transmitting a numerical control program from the computer to the numerical control circuit;

deciding second whether or not the transmission of the numerical control program is completed;

under the condition that the result of the second decision is affirmative, transmitting a signal for switching the mode into the automatic operation mode from the computer to the numerical control circuit;

deciding third whether or not the mode is suitable;

under the condition that the result of the third decision is affirmative, transmitting a cycle start button signal from the computer to the numerical control circuit;

starting an automatic operation of the machine tool;

transmitting operation state signals from the numerical control circuit to the computer;

monitoring the transmitted operation state signals by the computer;

deciding fourth whether or not the operation of the machine tool is completed; and

terminating the operation of the machine tool when the affirmative result of the fourth decision is obtained.

4,435,772
INTERACTIVE GRAPHIC SYSTEM

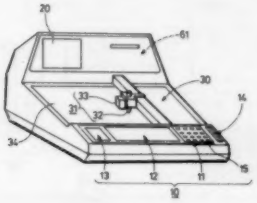
Yoshihiro Suzuki; Shuichi Nakagawa; Nobuhisa Kawamura; Shuichi Kurihara; Osamu Sakuma, and Masahiro Ito, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corp., Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,424

Claims priority, application Japan, Mar. 11, 1981, 56-33984

Int. Cl.³ G06K *15/22*

U.S. Cl. 364—520 **6 Claims**



1. An interactive graphic system comprising:

an X-Y plotter having a recording pen supported on a recording head drivable in response to an input signal for recording lines, symbols or marks on a plotting surface;

a keyboard having a plurality of function keys allotted to a variety of functions related to plotting, full keys bearing characters, numerals and symbols, and control keys for controlling said X-Y plotter;

a memory for storing an operating system with a program required for controlling the execution of a drawing program and a program required for plotting graphic patterns on an interactive basis, said memory including an exchangeable storage medium for storing various forms of fundamental graphic information accessible as desired by a command entered through said keyboard;

a display having a character display function for displaying characters as a guide for the inputting of graphic pattern drawing information via said keyboard and a graphic display function for displaying graphic patterns plotted;

a processor for executing the program stored in said memory for plotting graphic patterns in response to information entered through said keyboard; and

said X-Y plotter, said keyboard, said memory, said display, and said processor being a unitary structure for enabling said X-Y plotter to plot graphic patterns in response to information entered through said keyboard through interaction with said display.

4,435,773
RECEIVER FOR EFFECTING SYNCHRONOUS DEMODULATION

Heinz Göckler; Reinhard Till, both of Backnang, and Heinrich Schenk, Munich, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

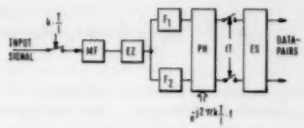
Filed Feb. 20, 1981, Ser. No. 236,823

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006801

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **5 Claims**

1. In a receiver for synchronously demodulating received sampled real bandpass signals composed of successive signal elements, said receiver containing a singal conduction path and including equalizing means connected in the path for equalizing the received signals, a pair of converting means connected in the path and operatively associated with the equalizing means for converting the signals provided by the equalizing means to analytical signals consisting of a pair of signals, a pair of sampling means connected in the path for sampling the analytical signals at time intervals corresponding to the time between successive signal elements, phase shifting means connected in the path and to the pair of sampling means for shifting the sampled signals in phase, and a decider connected in the



path for interrogating the pairs of phase-shifted sampled signals, the improvement comprising a single pair of filters constituting and pair of converting means, said single pair of filters further constituting said equalizing means.

4,435,774
METHOD OF AND ARRANGEMENT FOR CALCULATING THE DISCRETE FOURIER TRANSFORM BY MEANS OF TWO CIRCULAR CONVOLUTIONS

Theodoor A. C. M. Claasen, and Wolfgang F. G. Mecklenbräuker, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,228

Claims priority, application Netherlands, Mar. 17, 1980, 8001559

Int. Cl.³ G06F *15/332*

U.S. Cl. 364—726 **3 Claims**

1. A method of performing the discrete Fourier transform on an input array of N input signal values a(k), k=0, 1, 2, . . . N−1, wherein N is a prime, the metod comprising the steps of:

separating the input signal value a(0) from said input array of N input signal values to generate a modified input array of N−1 input signal values consisting of the input signal values a(1), a(2), . . . , a(N−1);

permuting said modified input array of N−1 input signal values to generate a permuted array of N−1 permutation signal values b(i), i=1, 2, . . . N−1, such permutation signal value b(i) being equal to input signal value $a(g^{N-i} \bmod N)$, wherein g is a positive integer which is equal to a primitive root of a field consisting of the numbers 1, 2, 3, . . . , N−1;

processing said permuted array by adding and substracting first and second signal values selected from said permuted array to produce first and second intermediate arrays of M intermediate first and second signal values $b_1(q)$ and $b_2(q)$ respectively, wherein:

$$m=(N-1)/2$$

$$q=1, 2, 3, \ldots, M$$

$$b_1(q)=b(q)+b(M+q)$$

$$b_2(q)=b(q)-b(M+q)$$

converting the first intermediate array of M intermediate first signal values $b_1(q)$ into a first auxiliary array of M auxiliary first signal values $y_1(p)$, p=1, 2, 3, . . . M, wherein

$$y_1(p) = \alpha \sum_{q=1}^{M} b_1(q) \cos\left(\frac{2\pi}{N} g^{1+((p-q) \bmod M)}\right),$$

in which α represents a constant;

converting the second intermediate array of M intermediate second signal values $b_2(q)$ into a second auxiliary array of M auxiliary second signal values $y_2(p)$, wherein:

$$y_2(p) = j\beta \sum_{q=1}^{p} b_2(q) \sin\left(\frac{2\pi}{N} g^{1+((p-q) \bmod M)}\right) + -j\beta \sum_{q=p+1}^{M} b_2(q) \sin\left(\frac{2\pi}{N} g^{1+((p-q) \bmod M)}\right),$$

in which β represents a constant and wherein $j=\sqrt{-1}$;

processing said first and second auxiliary arrays of M auxiliary first and second signal values to generate an output array of N−1 output signal values z(n)−Aa(0), n−1, 2, 3, . . . N−1 which are each proportional to the discrete Fourier transform of the array of N input signal values and which are defined by the relation

$$z(n)-Aa(0)=y_1(p)+(-1)^S y_2(p)$$

wherein

S=+1, for n=gP mod N.

S=0, for n=gM+p mod N.

A being a constant.

4,435,775

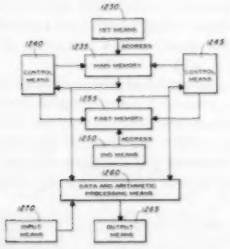
DATA PROCESSING SYSTEM HAVING INTERLINKED SLOW AND FAST MEMORY MEANS

George L. Brantingham, Tourrettes sur Loup, France, and Ashok H. Someshwar, Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 19, 1981, Ser. No. 221,416

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—900 **3 Claims**



1. A data processing system comprising:

first means for providing first address signals,

main memory means coupled to said first means, said main memory means selectively producing data signals responsive to said first address signals,

second means for providing second address signals,

fast memory means coupled to said second means, said fast memory means selectively producing data signals responsive to said second address signals and having a faster response output than said main memory means, said fast memory means being located on the same integrated circuit chip as the main memory means;

means coupled to said main and fast memory means for selectively deactivating said main memory means and for selectively activating said fast memory means in response to particular data signals output from said main memory means; and

means coupled to said main and fast memory means for selectively deactivating said fast memory means and for selectively activating said main memory means in response to predefined data signals output from said fast memory means.

4,435,776

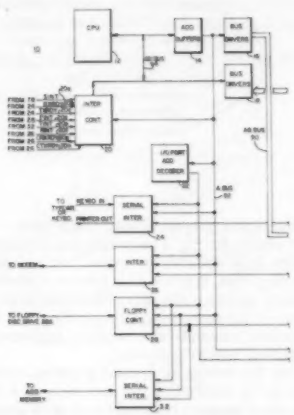
WORD PROCESSING SYSTEM

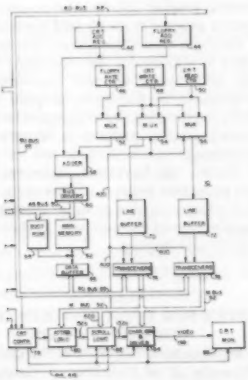
David J. Ratcliffe, deceased, late of Mendham, N.J. (by Madli-Ann Ratcliffe, executrix); Richard E. Jones, Holmdel, N.J.; Philip Shevrin, Ocean Township, Monmouth County, N.J., and Charles B. Haley, Watchung, N.J., assignors to Syntrex Incorporated, Eatontown, N.J.

Filed Jan. 27, 1981, Ser. No. 228,904

Int. Cl.³ G06F *3/02*

U.S. Cl. 364—900 **23 Claims**





1. A word processing system comprising

storage means for storing a plurality of words, each word having character line data and a scroll value,

character generating means for converting said character line data into a sequence of adjacent physical raster line data,

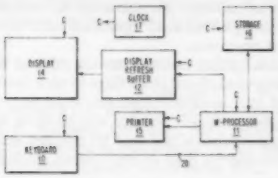
control means for addressinag said character generating means and responsive to said scroll value for varying the sequence of said physical raster line data in said character generator means producing a sequence of vertical raster line data, and

monitor means for displaying the sequence of said vertical raster line data received from said character generating means.

4,435,777
INTERACTIVELY REARRANGING SPATIALLY RELATED DATA

Rex A. McCaskill; John W. McInroy, and Paul D. Waldo, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,387
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **7 Claims**



1. An improved method for assisting an operator of an interactive text processing system in interactively entering instructional data into said system which defines to said system desired changes to be made to each spatially related vector formatted data record stored in an existing file which includes a header record having a plurality of named fields, the location of which in said header record establishes the spatial relationship of data in each said record, comprising the steps of:

(a) displaying to said operator said header record as a horizontal row of said named fields, each of which is disposed at a location in said row determined in accordance with said vector format;

(b) displaying to said operator a cursor disposed at a predetermined position in said horizontal row;

(c) moving said cursor to a position in said horizontal row which corresponds to a field location involved in one of said changes;

(d) initiating an edit operation corresponding to said one of said changes after the cursor is moved to said position in said horizontal row which corresponds to said one of said changes;

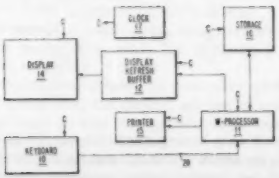
(e) storing in said system said instructional data defining said edit operation performed in step (d) by said operator and said position in said header of said cursor when said edit operation was initiated; and

(f) repeating steps (c), (d) and (e) for each desired said change to permit said system to subsequently edit each of said data records in said existing file in accordance with said stored instructional data.

4,435,778
METHOD FOR EDITING SPATIALLY RELATED DATA IN AN INTERACTIVE TEXT PROCESSING SYSTEM

William C. Cason; Rex A. McCaskill, both of Austin, and Francisco A. Karner, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,368
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 **8 Claims**



1. In a method of interactively editing text data displayed on a display screen of an interactive test processing system having a keyboard and a microprocessor including a memory for storing (1) programs; (2) conventional text data in one format; and (3) spatially related text type data in a second format, said spatially related text type data being stored in said memory in said second format as a plurality of vector formatted records to permit data processing type operations to be performed by said system on said records in either an interactive or non-interactive mode, said method including the step of displaying on said screen at least one line of text data stored in said system in said one format to permit the operator of said system to interactively edit said one line of displayed text data in accordance with a prescribed set of interactions of said operator with said screen and said keyboard, the improvement characterized by the steps of:

(A) converting with said microprocessor at least one portion of one of said vector formatted records of spatially related text type data stored in said memory from said second format to said one format;

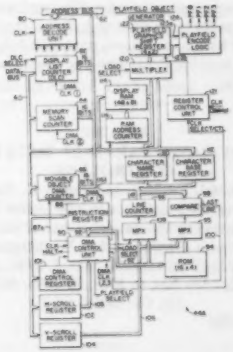
(B) displaying to said operator said converted one portion on said display screen; and

(C) editing said displayed converted one portion interactively by said prescribed set of operator interactions involving said operator, said keyboard and said display screen.

4,435,779
DATA PROCESSING SYSTEM WITH PROGRAMMABLE GRAPHICS GENERATOR

Steven T. Mayer, Auburn; Jay G. Miner, Sunnyvale; Douglas G. Neubauer, Santa Clara, and Joseph C. Decuir, Mountain View, all of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Division of Ser. No. 1,497, Jan. 8, 1979, Pat. No. 4,296,476. This application Jun. 8, 1981, Ser. No. 271,324
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 **13 Claims**



1. A raster graphics generator circuit having two modes of operation, a map mode and a character mode. the circuit comprising:

a digital memory for storing a sequence of display instructions, including map and character instructions, and for storing sequential graphics information, sequential character names, and character blocks of graphics information, each character block comprising a number of bytes,

a display list circuit coupled to the digital memory for addresing a sequent display instruction in response to a start signal; and

logic circuitry coupled to the digital memory and responsive to an addressed display instruction for operating in one of two modes; a map mode in response to a map instruction and a character mode in response to a character instruction, the logic circuitry including map means operable in

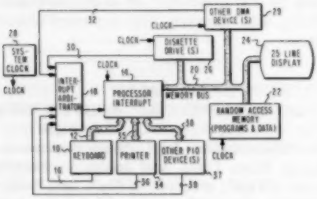
the map mode for sequentially addressing the sequential graphics information and for providing raster graphics signals in response to the addressed sequential graphics information; the logic circuitry further including character means operable in the character mode for addressing the sequential character names, for storing the addressed character names, for addressing character blocks of graphics information in response to the stored character names, and for providing raster graphics signals in response to the addressed character blocks of graphics information.

4,435,780

SEPARATE STACK AREAS FOR PLURAL PROCESSES

Kenneth M. Herrington, and Kenneth L. Jeffries, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,114
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **6 Claims**



1. A method of efficiently handling priority ordered, interrupt driven processor allocation in a multiprocess environment including the step of:

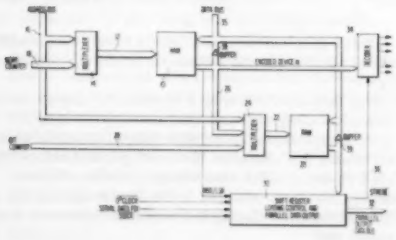
defining an independently indentified and addressable stack storage area for each process to be performed, each stack so defined having a process control block, the beginning of which is coincident with the beginning of the stack storage area.

4,435,781

MEMORY-BASED PARALLEL DATA OUTPUT CONTROLLER

Raymond J. Stattel, Lanham, and James K. Niswander, Silver Spring, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 128,230, Mar. 7, 1980, abandoned. This application Jun. 9, 1983, Ser. No. 501,060
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **3 Claims**



1. A memory-based parallel data output controller for the extraction of predetermined bits from an inputted bit serial digital data stream for use with a frame synchronizer of the type having a word counter, a bit counter, a link synchronization status signal and a reference clock, said output controller receiving said inputted bit serial digital data stream and decommutating said predetermined extracted bits into multiple channels of predetermined parallel telemetry data to a plurality of peripheral devices, comprising:

a first random access memory having address lines and at least as many memory address locations as there are channels, said word counter being connected to said address lines of said first random access memory which provides as its output an encoded peripheral device number and a first flag denoting either most significant bit or least significant bit first operation,

a second random access memory having address lines and for outputting second and third flags to pick out the start and stop of said predetermined extracted bits, said encoded peripheral device number output from said first random access memory and said bit counter being connected to the address lines of said second random access memory,

a serial-in parallel-out shift register for outputting said predetermined extracted bits in a parallel format representing said parallel telemetry data,

shift register control means for receiving said bit serial digital data stream, said first, second and third flags, said link synchronization status signal and said reference clock and, therefrom, for developing and outputting a strobe pulse, a mode pulse, a shift pulse, and serial data pulse stream all of which output pulses being inputted into said shift register,

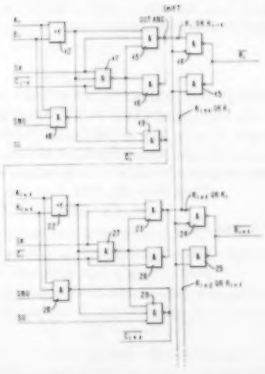
decoding means connected to receive said encoded peripheral device number output from said first random access memory and receiving and being enabled by said output strobe pulse for selecting one of said plurality of peripheral devices to receive said parallel telemetry data from said shift register.

4,435,782

DATA PROCESSING SYSTEM WITH HIGH DENSITY ARITHMETIC AND LOGIC UNIT

Dan R. Kaufman, Kingston, and Gerhard R. Thompson, Wappingers Falls, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,794
Int. Cl.³ G06F *7/48, 7/50*
U.S. Cl. 364—716 **6 Claims**



1. A processor chip having means for supplying two multibit data words on which arithmetic and logic operations are to be performed and having means supplying control signals defining an operation to be performed, a multi-stage arithmetic and logic unit having for each stage a sum output and a carry output, two inputs for receiving the corresponding bits of the

two multi-bit data words and an input for receiving a carry output from a preceeding stage, comprising,

means responsive to the data inputs and to control signals defining a predetermined logic function to form at the carry output of the stage a logic function of the data input bits to the stage and to form at the sum output of the stage a logic function of the carry input to the stage, the two functions combining in two adjacent stages to produce said predetermined function, and

means for shifting the sum outputs of the arithmetic and logic unit one bit position to the right to realign the output bits.

4,435,783

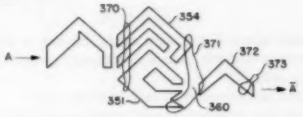
MAGNETIC BUBBLE LOGIC APPARATUS

Richard P. Williams, Columbia, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,664

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—5 **2 Claims**



1. An apparatus for propagation of magnetic bubbles comprising:

an input stage including inuts for receiving one or more bubbles;

a strip-former stage adjacent the input stage and including a plurality of propagating elements vertically spaced so as to selectively form bubbles or strips of variable height dependent upon the combination of bubbles provided to the first stage, at least one of said propagating elements being an idler element and at least one of said combinations producing a strip extending the full-height of said strip-former stage, and

a decoding stage having a first output propagating element spaced apart from said strip former a distance sufficient to prevent propagation of all but said full-height strip onto said first output element.

4,435,784

MULTI-REPLICATOR STRETCHER DETECTOR

Isoris S. Gergis, Yorba Linda, and Wai-Tak P. Lee, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 27, 1980, Ser. No. 200,816

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—8 **12 Claims**

1. A detector for magnetic bubble domain devices comprising:

a propagation path comprising a dual conductor propagation track for magnetic bubble domains;

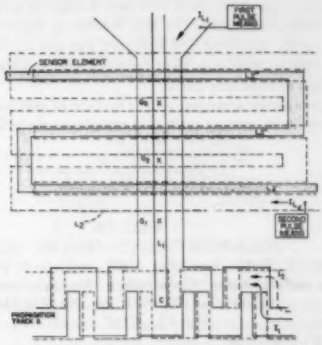
first and second current means connected to said dual conductor propagation track for applying a time varying current thereto;

the current applied to said first conductor track being different in phase than the current applied to said second conductor track so that a magnetic bubble domain is propagated along the dual conductor;

expander means disposed adjacent said propagation path and functioning to expand a bubble domain on said path in a first direction, said expander means comprises a hairpin loop intersecting said propagation path at a substantially right angle;

replication means disposed adjacent said expander means and functioning to cut said expanded bubble into a plurality of magnetic bubble domains and to expand the bubble domains in a second direction different from said first direction;

said replication means comprises a multi-loop conductor track intersecting said expander means at approximately a right angle; and



detection means disposed along said second direction and functioning to detect said plurality of magnetic bubble domains, said detection means being formed by elongated strips of a magnetoresistive sensor element extending essentially parallel to and between the turns of said multi-loop conductor track.

4,435,785

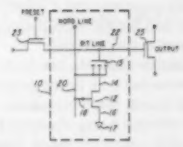
UNIPOLAR VOLTAGE NON-VOLATILE JRAM CELL

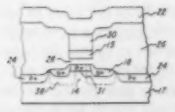
Richard A. Chapman, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1981, Ser. No. 269,201

Int. Cl.³ G11C *11/24*; H01L *29/80*

U.S. Cl. 365—147 **9 Claims**





1. A non-volatile data storage cell having a P-channel JFET as the addressing element for the non-volatile storage element of said cell, said P-channel JFET having a source region of a higher level of impurity concentration for changing voltage breakdown threshold, wherein writing and erasing data in said cell is accomplished by voltages of the same polarity.

5. A non-volatile data storage cell comprising:

a semiconductor substrate of one conductivity type;

a first region of conductivity opposite that of the substrate, extending to the surface of said substrate, wherein said first region surrounds an enclosed region of said substrate, said enclosed region of substrate having a higher level of

impurity concentration of the same conductivity type as said substrate for changing the breakdown voltage between said substrate and said first region of opposite conductivity;

an insulating layer covering the surface of said substrate, said first region of opposite conductivity, and said enclosed region of substrate;

a multidielectric structure overlying said enclosed substrate region and recessed into said insulating layer such that a reduced thickness of said insulating layer is present between said dielectric structure and said enclosed substrate region, than is present between said substrate and subsequent structure parts;

a conductor arranged on the surface of said insulating layer to be in contact with said multilayer dielectric structure.

4,435,786

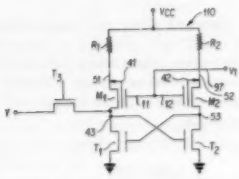
SELF-REFRESHING MEMORY CELL

Andrew C. Tickle, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Nov. 23, 1981, Ser. No. 324,344

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—154 **4 Claims**



1. A memory cell comprising:

a first MOS transistor and a second MOS transistor, each of said first and second MOS transistors possessing a source, a drain, and a control gate;

a third MOS transistor and a fourth MOS transistor, each of said third and fourth MOS transistors possessing a source, a drain, and a control gate;

a pair of resistive elements, one lead of each resistive element being connected to a corresponding drain of one of said third and fourth MOS transistors, the other lead of each resistive element being connected to a voltage source;

a first floating gate positioned between the gate and the channel of said third MOS transistor but insulated therefrom and having a portion extending above but separated by dielectric from the drain of said third MOS transistor, said dielectric having a portion thereof sufficiently thin to allow electrons to tunnel therethrough between the drain of said third MOS transistor and said first floating gate;

a second floating gate positioned between the gate and the channel of said fourth MOS transistor but insulated therefrom and having a portion extending above but separated by dielectric from the drain of said fourth MOS transistor, said dielectric having a portion thereof sufficiently thin to allow electrons to tunnel therethrough between the drain of said fourth MOS transistor and said second floating gate;

means connecting the control gates of said third and fourth MOS transistors to a source of gate potential;

means connecting the control gate of said first MOS transistor to the drain of said second MOS transistor; and

means connecting the control gate of said second MOS transistor to the drain of said first MOS transistor.

4,435,787

SEMICONDUCTOR MEMORY CIRCUIT

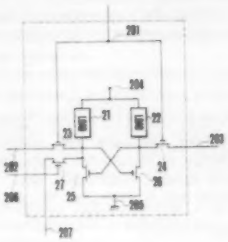
Nobuyuki Yasuoka, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,106

Claims priority, application Japan, Oct. 21, 1980, 55-147142

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—174 **6 Claims**



6. A semiconductor memory array having a plurality of memory circuits wherein each said memory circuit comprises:

a memory cell;

a first word line coupled to said memory cell;

a first digit line coupled to said memory cell for receiving data from said memory cell when a signal of a first potential is coupled to said first word line;

a second word line coupled to said memory cell and extending from said memory cell in a direction perpendicular to said first word line; and

a second digit line coupled to said memory cell and extending from said memory cell in a direction perpendicular to said first digit line, for receiving data when a signal of a second potential is coupled to said second word line; whereby an array of memory circuits is realized having first word lines crossing second word lines at right angles, and first digit lines crossing second digit lines at right angles.

4,435,788

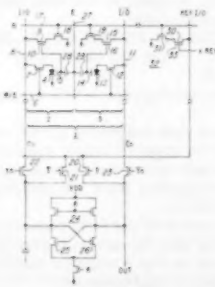
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Norihisa Kitagawa, Tokyo, and Hiroji Asahi, Zama, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 30, 1981, Ser. No. 230,162

Int. Cl.³ G11C *11/40, 7/00*

U.S. Cl. 365—185 **3 Claims**



1. A non-volatile semiconductor memory device comprising a plurality of memory cells arranged in a matrix pattern of rows and columns and row address means including separate row lines for read and write for each row and separate true and

complement column lines for each column, sense amplifier means connected to the column lines for sensing data stored in said memory cells, characterized in that each of said memory cells comprises a pair of symmetrical submemory cells, each submemory cell containing a floating gate and injector means, and the pair of said submemory cells can store logic states opposite to each other on said floating gates.

4,435,789

CIRCUIT FOR A READ-ONLY MEMORY ORGANIZED IN ROWS AND COLUMNS TO PREVENT BIT LINE POTENTIALS FROM DROPPING

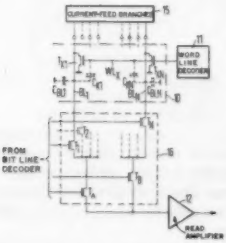
Burkhard Giebel, Munich; Hans Moormann, Haar, and Lothar Schrader, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 6, 1981, Ser. No. 290,515

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030867

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—203 **7 Claims**



1. Circuit arrangement for a read-only memory organized in rows and columns, including bit lines having potentials applied thereto, and selection circuits being connected to the bit lines, being addressed by a bit line decoder and containing at least one selection transistor having a cut-off voltage and a gate potential, for preventing bit line potentials from dropping below a given value at which the selection circuits become conducting without having been selected by the bit line decoder, comprising current-feed lines each being connected to a different one of the bit lines for feeding current to the bit lines and for ensuring that for each of the selection circuits not selected by the bit line decoder the difference between at least one gate potential of the participating selection transistors and the respective bit line potential is smaller that the cut-off voltage of the respective section transistors, and including first and second potential sources, said current-feed lines each including an MOS transistor having a source-drain path connected between a different respective bit line and said first potential source and a gate connected to said second potential source, said potential sources being chosen so as to prevent current from flowing in non-selected selection circuits.

4,435,790

HIGH SPEED, NONVOLATILE, ELECTRICALLY ERASABLE MEMORY CELL AND SYSTEM

Andrew C. Tickle, Los Altos, and Madhukar B. Vora, Los Gatos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

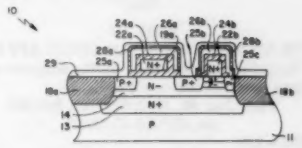
Division of Ser. No. 219,784, Dec. 24, 1980. This application Mar. 14, 1983, Ser. No. 474,929

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—218 **7 Claims**

1. A method for encoding binary data into an electrically erasable memory, said memory comprising a matrix of memory cells formed as a plurality of rows and a plurality of columns of said cells each of said cells comprising a floating gate field effect pMOS transistor for storage of binary data and an npn bipolar transistor for selective access to stored data, a plurality of X write lines the control gate of each said storage transistor in a row of said memory cells being connected to an X write line corresponding to said row, a plurality of X sense lines the emitter of each said bipolar transistor in a row of said memory cells being connected to an X sense line corresponding to said row, a plurality of source lines the source of each said bipolar transistor in a row of said memory cells being connected to a source line corresponding to said row, and a plurality of Y sense lines the collector of each said bipolar transistor in a column of said memory cells being connected to a Y sense line corresponding to said column, the method comprising:

(a) applying an erase voltage to each of said Y sense lines and, simultaneously, maintaining each of said X sense lines



at said erase voltage, maintaining each of said X write lines at ground and applying said erase voltage to each of said source lines such that each of said storage transistors assumes a relatively negative threshold state; and

(b) applying a write voltage to selected X write lines while maintaining unselected X write lines at ground and, simultaneously, maintaining selected Y sense lines at ground and unselected Y sense lines at an inhibit voltage which is less than said write voltage and maintaining each of said X sense lines at an intermediate voltage which is equal to or less than the base/emitter breakdown voltage of said bipolar transistors such that the storage transistors of memory cells located at the intersections of said selected X write lines and said selected Y sense lines assume a relatively positive threshold state.

4,435,791

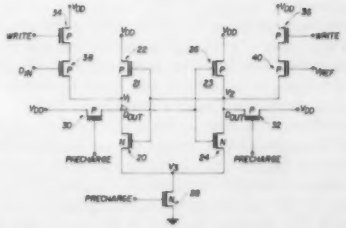
CMOS ADDRESS BUFFER FOR A SEMICONDUCTOR MEMORY

Benjamin L. Gingerich, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 9, 1981, Ser. No. 300,616

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—230 **30 Claims**



1. In a buffer circuit for an address input of a semiconductor memory comprising regenerative latch means having first and second input/output voltage nodes, said regenerative latch means connected to a supply voltage and including a pair of cross-coupled inverter circuits for providing output signals in response to a data input signal, the improvement comprising an input circuit including:

a write transistor having a gate for receiving a write signal, a source connected to said supply voltage, and a drain;

a data input transistor having a gate for receiving said data input signal, a source connected to said drain of said write transistor and a drain connected to said first input/output voltage node;

said input circuit applying said supply voltage to said first input/output voltage node in response to said data input and said write signals.

4,435,792

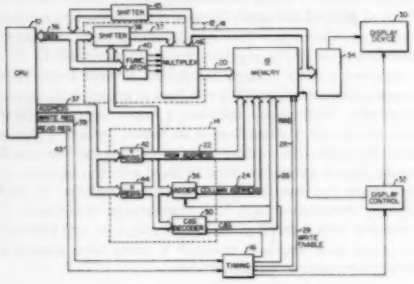
RASTER MEMORY MANIPULATION APPARATUS

Andreas Bechtolsheim, Stanford, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 30, 1982, Ser. No. 393,599

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—230 **21 Claims**



18. A Boolean modifiable memory apparatus in which data stored within memory are modified in accordance with input data and function data, comprising

memory means for supplying stored data from a specified location during a memory read cycle and responsive to modified data for storing modified data at a specified location during a memory write cycle; and

multiplexer means, responsive to the modified data supplied from the memory means, to the input data, and to the function data, for supplying the modified data to the memory means for storage,

wherein the multiplexer means have a plurality of data lines and a plurality of control lines and are operable to supply, as an output, data which are present on one of the plurality of data lines, in accordance with the combination of data present on the plurality of control lines, and

furtherwherein the function data are supplied to the data lines of the multiplexer means, the stored data are applied to ones of the plurality of control lines, and the input data are supplied to different ones of the plurality of control lines, so that the output of the multiplexer means corresponds to a Boolean function of the stored data and the input data, the Boolean function being specified by the function data;

whereby the stored data and the input data are supplied to the control lines and the function data are supplied to the data lines all during the memory read cycle, and the modified data, which is the result of the specified Boolean operation upon the stored data and input data, are supplied to the memory means for storage during the memory write cycle.

4,435,793

SEMICONDUCTOR MEMORY DEVICE WITH DUMMY WORD LINE/SENSE AMPLIFIER ACTIVATION

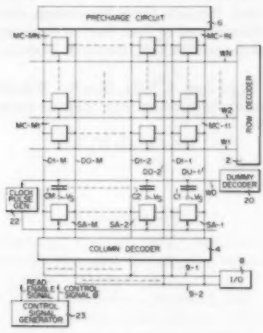
Kiyofumi Ochii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 171,264, Jul. 22, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,624

Claims priority, application Japan, Jul. 26, 1979, 54-95527; European Pat. Off., Jul. 18, 1980, 80104251.6

Int. Cl.³ G11C *7/00, 8/00*

U.S. Cl. 365—233 **27 Claims**



1. A semiconductor memory device comprising:

a plurality of semiconductor memory cells;

at least one word line coupled to said plurality of semiconductor memory cells for selectively transmitting an access signal thereto;

at least one pair of data lines coupled to said plurality of semiconductor memory cells for transferring data with respect thereto;

sense amplifier means coupled to said at least one pair of data lines for amplifying a data signal transferred therethrough;

a dummy word line having a signal transfer property corresponding to that of said at least one word line;

a dummy selection signal generating means coupled to said dummy word line for supplying a dummy selection signal to said dummy word line every time an addressing operation is effected; and

energizing signal generating means coupled to said dummy word line for generating a first energizing signal for a preset period of time in each operation cycle to activate said sense amplifier means in response to a dummy selection signal transmitted through said dummy word line.

4,435,794

WALL-DRIVEN OVAL RING TRANSDUCER

William J. Marshall, Jr., and Gerald A. Brigham, both of Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 6, 1981, Ser. No. 280,749

Int. Cl.³ H04R *17/00*

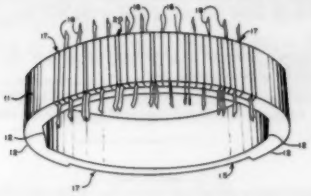
U.S. Cl. 367—155 **10 Claims**

1. A wall-driven oval ring transducer comprising:

(a) an oval cylindrical shell comprised of walls having a thickness with inner and outer side walls and having major and miner axes in cross-section and being symmetrical about said axes, the thickness of said walls in two opposed regions having said major axis passing therethrough being sized in relationship to the thickness of said walls in two opposed regions having said minor axis passing therethrough so as to place the fundamental frequency of the transducer at a preselected level; and,

(b) extension means disposed circumferentially within a pair

of cut out sections in opposed portions of said walls and connectable to a source of a driving signal for simultaneously applying an outward flexing force to said walls in said regions having said minor axis passing therethrough.

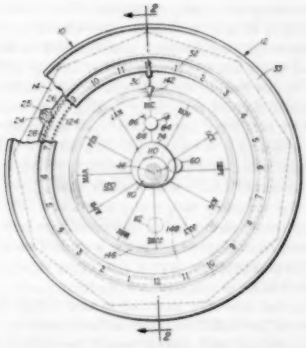


4,435,795

CELESTIAL CLOCK

John Frank, Anchorage, Ak., assignor to A.I.M. Services, Anchorage, Ak.

Filed Apr. 7, 1981, Ser. No. 251,880
Int. Cl.³ G04B *19/26*
U.S. Cl. 368—16 **27 Claims**



1. A clock for indicating daily time and the relative positions of at least two celestial bodies of the earth's solar system with respect to the earth, comprising:

an axis;

a center hub representative of the earth centered on said axis;

hour indicator means rotatable about said axis one revolution per day;

sun indicator means representative of the sun rotatable about said axis one revolution per day, said sun indicator means and said hour indicator means superimposed with respect to each other, and said sun indicator means rotatable relative to said hour indicator means;

planet indicator means representative of a planet rotatable about said sun indicator means at a rate substantially equal to the planet's natural period of revolution about the sun; and

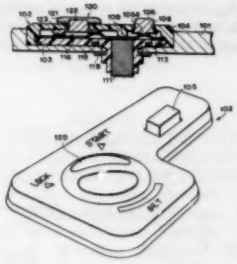
drive means for automatically rotating said indicator means at their prescribed rates.

4,435,796

ELECTRICAL CONNECTION CONSTRUCTION FOR ELECTRONIC TIMEPIECE

Motoyuki Saito, and Hideo Hatanaka, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Division of Ser. No. 159,446, Jun. 13, 1980, Pat. No. 4,403,315.
This application Jul. 8, 1982, Ser. No. 396,440
Claims priority, application Japan, Jul. 23, 1979, 54-100605
Int. Cl.³ G04B *29/00*
U.S. Cl. 368—321 **5 Claims**



1. An electronic timepiece assembly comprising a switch upper plate having a contact pattern formed on the lower surface thereof, said contact pattern including a plurality of spaced terminals, a connector having a plurality of spaced electrical conductors engaging said terminals at the upper ends of said conductors and adapted to engage a module at the lower ends of said conductors, said switch upper plate contact pattern further including a plurality of spaced terminal portions, a switch lower base having a plurality of spaced electrically conductive elements on the upper surface thereof, each of said conductive elements being disposed in alignment with a corresponding pair of said terminal portions on said switch upper plate, and a plurality of projections operable from the outside so as to be resiliently deformed and bring a selected pair of said spaced terminal portions and a corresponding one of said conductive elements into engagement to complete a selected circuit, said electronic timepiece assembly further including a case within which said switch upper plate and said switch lower plate are disposed, a plurality of actuating members extending externally of said case for effecting deformation of said projections, one of said actuating members being arranged to move generally parallel to said switch upper plate.

4,435,797

OPTICAL MEMORY SYSTEM HAVING TRACK FOLLOWING AND SEEKING CAPABILITIES

Der-Chang Hsieh, Thousand Oaks, and Edward V. LaBudde, Newbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1982, Ser. No. 349,535
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—32 **11 Claims**

1. In a high density storage system including a recording medium having a large plurality of closely spaced tracks, the combination comprising:

means including a radiation beam for reading data recorded in a track;

means providing for relative movement of said radiation beam along said track;

means for deriving a track following signal indicative of the deviation of said radiation beam from a track being followed;

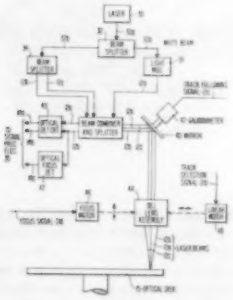
first position control means coupled to said track following signal for moving said radiation beam to provide track following operation such that said radiation beam follows said track;

detecting means for detecting the movement of said first

position control means during said track following operation;

second position control means coupled to said detecting means and operating concurrently with said first position control means during said track following operation, said second position control means being responsive to said detecting means for providing movement of said first position control means so as to reduce the movement required thereby for maintaining said radiation beam following said track; and

track seeking control means for causing movement of said beam from a current track being followed to a new track, said track seeking control means including short seek control means and long seek control means, said short



seek control means being operative to control movement of said beam when the number of tracks to be moved is equal to or less than a predetermined value and said long seek control means being operative to control movement of said beam when the number of tracks to be moved is greater than said predetermined value;

said short seek control means being operative to temporarily disable said track following operation during which time said first position control means is used for performing a short seek operation; and

said long seek control means being operative to temporarily disable said track following operation for a temporary time period during which said second position control means is used for performing a long seek operation.

4,435,798

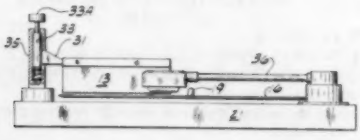
METHOD AND APPARATUS FOR CLEANING DISKS CONTAINING ENCODED INFORMATION

Stanley Taub, 465 W. Broadway, New York, N.Y. 10012

Filed Mar. 24, 1982, Ser. No. 361,140

Int. Cl.³ G11B *3/58;* **A47L** *13/40*

U.S. Cl. 369—72 **22 Claims**



1. The method of cleaning disks containing encoded information, such as phonorecords and videodiscs, comprising:

mechanically charging in a charging area to a voltage sufficient to remove dust particles from the surface of a disk to be cleaned, an electrostatically activatable elongate body of soft flexible material by pressing it against a surface coated with a pressure sensitive adhesive, and then separating the body from said adhesive coated surface thereby simultaneously cleaning and charging said body, said voltage being substantially uniform along the longitudinal axis of the body, the body being capable of retaining a voltage of said level at least long enough to permit passing said body over one entire side of the disk before recharging;

moving said body from the charging area to the surface of the disk to be cleaned; and

passing the body over at least a portion of the surface of the disk to be cleaned to remove dust particles therefrom.

4,435,799

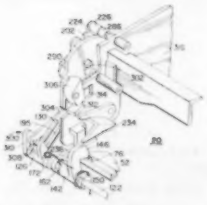
DISC RECORD PLAYER HAVING SHUTOFF SWITCH ACTUATING APPARATUS

Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,463

Int. Cl.³ G11B *19/10, 17/00, 1/00*

U.S. Cl. 369—77.2 **5 Claims**



1. In a record player for use with a record enclosed in a protective caddy; said caddy consisting of a record retaining spine removably located within an outer sleeve; said retaining spine having an opening in which said record is received forming a record/spine assembly; said player having an input slot near the front end thereof through which said caddy is inserted to load a record therein; said player having a record extraction mechanism for removing said record/spine assembly from said sleeve and retaining it in said player on a set of front and rear receiving pads when said sleeve is extracted from said player after the insertion of a full caddy therein; said player including a turntable for rotatably supporting a retained record during playback; an empty sleeve being reinserted into said player to recapture said record/spine assembly; a shutoff switch actuating apparatus comprising:

a shutoff switch;

a cam member movably mounted in said player for motion between a first location and a second location;

means coupled to said shutoff switch for driving said cam member between said first location and said second location;

a shutoff switch actuating member movably mounted in said player for motion between a first position and a second position, respectively, in response to the absence of and the presence of a record/spine assembly in said player;

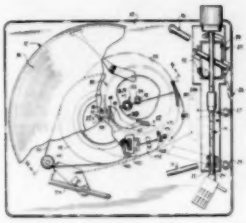
the location of said actuating member being such that said actuating member is disposed in and out of the path of a portion arranged on said cam member when said actuating member respectively occupies said first position and said second position during said motion of said cam member between said locations; and

said portion on said cam member engaging and deflecting said actuating member to activate said shutoff switch to turn off said cam member driving means when said actuating member is occupying said first position in response to the absence of said record/spine assembly in said player during said motion of said cam member away from said first location.

4,435,800
AUTOMATIC RECORD PLAYER

James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73155, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.

Division of Ser. No. 211,837, Dec. 1, 1980, Pat. No. 4,352,177, Division of Ser. No. 9,254, Feb. 5, 1979, Pat. No. 4,291,886, which is a continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application May 12, 1982, Ser. No. 377,150
Int. Cl.³ G11B *17/08*
U.S. Cl. 369—225 11 Claims

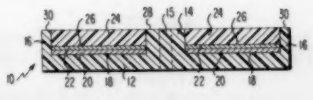


1. In an automatic record player, the combination of, a turntable, a tone arm, means for mounting said tone arm for rotation about a fixed point beyond said turntable, a main cycling gear, cam means carried by said gear, means for rotating said gear one revolution during an automatic cycle, a rest post for said tone arm, tone arm retaining means positioned to be engaged by said tone arm, means controlled by movement of said gear during the first half of an automatic cycle for moving said tone arm outwardly into engagement with said rest post, means controlled by movement of said gear during the last half of an automatic cycle for moving said tone arm inwardly to a point over the lead-in groove of a record positioned on said turntable, means responsive to movement of said cam means during an automatic cycle for raising and lowering said tone arm, and means operable independently of said cam means during an automatic shutoff cycle for lowering said tone arm into engagement with said tone arm retaining means while said tone arm is in engagement with said rest post, said tone arm retaining means being effective to restrain said tone arm from inward movement during the remaining portion of said automatic shutoff cycle.

4,435,801
INFORMATION RECORD WITH A THICK OVERCOAT

Leonard J. Levin, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 108,030, Dec. 28, 1979, Pat. No. 4,340,959. This application Mar. 31, 1982, Ser. No. 363,790
Int. Cl.³ G11B *7/24*
U.S. Cl. 369—275 8 Claims



1. In an information record, having an information track therein, for use in an optical recording and readout system employing a light beam of a certain wavelength which comprises:

a substrate having a major surface;

a light reflective layer, which reflects a substantial portion of light incident thereon at said wavelength, overlying at least a portion of said major surface;

a light absorptive layer, which absorbs light at said wavelength, overlying said light reflective layer;

an overcoat layer, which is substantially transmissive of light at said wavelength, overlying said light absorptive layer;

wherein said information track comprises a sequence of openings in said absorptive layer with variations in either or both the length of the openings along the track and the spacing between successive openings being representative of the recorded information;

the improvement which comprises a substrate having a major surface which has a center portion and a portion extending about said substrate periphery raised a distance above said major surface,

wherein said light reflective layer, and said light absorptive layer overlie at least a portion of the major surface which is not raised and said overcoat layer overlies said major surface which is not raised.

4,435,802
SYNTHETIC RESIN MATERIAL, PARTICULARLY SURFACE MATERIAL FOR PHONOGRAPH RECORDS WITH A PHOTOGRAPH OR PICTURE

Masahisa Sakamoto, 1-1-7, Nijo-cho, Nara-shi, Nara; Yoshio Tamura, 1370, Ohsawa, Mutaka-shi, Tokyo, and Tadashi Sakamoto, 1-1-3, Saidaiji-Nogami, Nara-shi, Nara, all of Japan, assignors to Masahisa Sakamoto, Nara; Yoshio Tamura, Tokyo; Tadashi Sakamoto, Nara and Hiroji Kawamura, Shizuoka, all of, Japan

Filed Sep. 2, 1981, Ser. No. 298,772
Claims priority, application Japan, Feb. 17, 1981, 56-22464
Int. Cl.³ C08J *3/12*
U.S. Cl. 369—286 2 Claims

1. A process for preparing a non-recorded phonograph record disc, comprising:

subjecting a copolymeric vinyl chloride powder incorporated with a small amount of a stabilizer to a hot blending treatment;

melt-kneading the product under heating;

cooling the same to ambient temperature to form a mass;

granulating the mass;

freezing the resulting granules;

grinding the frozen granules into powders;

applying said powders to a core sheet having a photograph or picture thereon, by means of an adhesive; and

pressing the resin material under heating to form a transparent surface film of a uniform thickness.

4,435,803
ANALOG SUBSCRIBER/TRUNK MODULE WITH SHARED RINGING SOURCE AND RING-TRIP

Santanu Das, Huntington; Ramon C. W. Chea, Jr., Monroe, and Russ C. Casterline, Trumbul, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 135,756, Mar. 31, 1980, abandoned. This application Nov. 18, 1981, Ser. No. 322,606
Int. Cl.³ H04J *3/12;* H04M *19/02;* H04Q *1/22*
U.S. Cl. 370—16 21 Claims

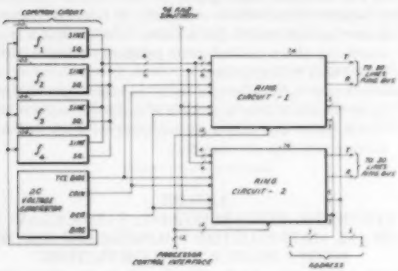
1. A telephone signaling system comprising:

means for providing line termination for a plurality of analog telephone subscriber lines or trunks carrying bidirectional analog communication signals, said means including multiplex means for digitally multiplexing analog information from said analog lines or trunks into multi-channel frames of time division multiplexed data on digital transmission links;

digital signal processing means for deriving ringing control signals;

a source of ringing signals including a plurality of different frequency generators, selected in accordance with said ringing control signals for application to one or more of said plurality of subscriber lines to provide multifrequency ringing, said ringing signals having an active and a silent period during each ringing cycle;

shared ring-trip circuit means coupled to said line termination means for sensing an OFF-HOOK condition during the active period of the ringing interval providing shared ringing for a plurality of said lines or trunks and that plural lines or trunks can be rung simultaneously during the active period of a ringing cycle by coupling said selected



ringing signals to said analog lines or trunks in response to said ringing control signals; and

logic means responsive to said control signals for enabling said ringing signals to be coupled from said source of ringing signals to selected ones of said plurality of subscriber lines or trunks to provide immediate ringing to said selected lines or trunks.

4,435,804

SUB-SIGNAL TRANSMITTING SYSTEM

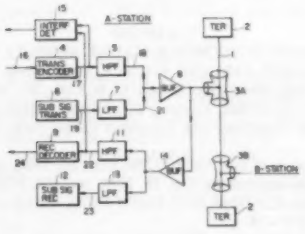
Yoichi Tan, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1982, Ser. No. 357,449

Claims priority, application Japan, Mar. 13, 1981, 56-35243

Int. Cl.³ H04J *1/14*

U.S. Cl. 370—69.1 **7 Claims**



1. A data transmission system wherein data is transmitted in packet form between multiple stations, comprising:

main signal transmitting means for a main signal to be transmitted in the form of a packet, said main signal being directed along a transmission path including an encoder, said encoder converting said main signal into a transmission waveform having a power spectrum with significantly attenuated low frequency components;

sub-signal transmitting means for a sub-signal to be transmitted, said sub-signal being independent of said main signal and being in the low frequency region of said encoder;

means for superimposing said main signal and sub-signal and transmitting the combined signals.

4,435,805

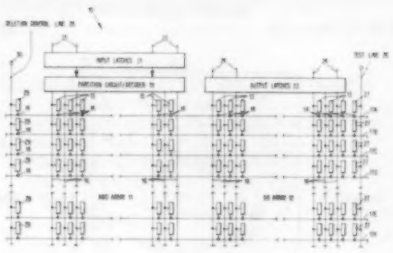
TESTING OF LOGIC ARRAYS

John C. Hsieh, and Wei-Wha Wu, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,435

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—25 **8 Claims**



1. A programmable logic array comprising:

a plurality of input columns for accepting digital input signals;

a plurality of output columns for providing digital output signals which are a predetermined logical function of said input signals;

a plurality of rows intersecting said input columns and said output columns;

a matrix of logic performing elements located at the intersection of at least some of said input and output columns and said rows for generating said predetermined logical function;

a deletion control line intersecting said rows;

means for connecting said deletion control line to selected rows to thereby prevent the logic performing elements connected to said selected rows from contributing to said predetermined logical function upon activation of the logic performing elements connected to said selected rows by an appropriate digital input signal at said input columns, and thereby permit testing of a row which is not connected to said deletion control line without interference from said selected rows; and

means for disabling said deletion control line to thereby permit the logic performing elements connected to said selected rows to contribute to said predetermined logical function, notwithstanding the connection of said selected rows to said deletion control line;

whereby the proper operation of the logic performing elements in a row which is not connected to said deletion control line may be verified without interference from the logic performing elements connected to said selected rows.

4,435,806

DEVICE FOR TESTING A CIRCUIT COMPRISING SEQUENTIAL AND COMBINATORIAL LOGIC ELEMENTS

Marinus T. M. Segers; Cornelis Niessen, and Krijn Kuiper, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,625

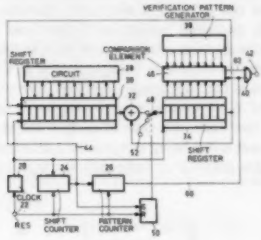
Claims priority, application Netherlands, Jul. 21, 1980, 8004176

Int. Cl.³ G01R *31/28*

U.S. Cl. 371—25 **4 Claims**

1. A digital signal processing device comprising a plurality of binary storage elements provided with control means to constitute a first shift register; said shift register having a first series input for receiving a test pattern, a first parallel output

connected to signal processing elements in the device for presenting thereto said test pattern, a first parallel input connected to said signal processing elements for receiving therefrom a result pattern, and a first series output for outputting said result pattern; said digital signal processing device comprising a second shift register, said second shift register having a second serial output feeding said first serial input and feed-



back means; said feedback means comprising a retrocoupled connection for effecting an EXCLUSIVE-Or-function with at least one stage input of said second shift register; said second shift register having a verification output for feeding a verification means; and wherein said first and second shift registers have initializing means for receiving an initial signal pattern before the start of a test.

4,435,807

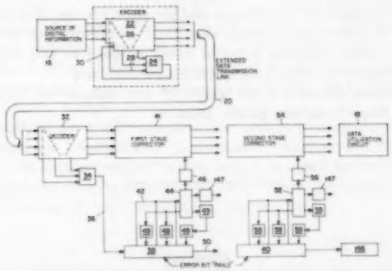
ORCHARD ERROR CORRECTION SYSTEM

Edward W. Scott, 1843 Lake St., Glendale, Calif. 91201, and Daniel B. Goetschel, 2106 Massachusetts Ave., #3C, Troy, N.Y. 12180

Continuation-in-part of Ser. No. 163,322, Jun. 26, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,109

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—50 **14 Claims**



1. A system for the transmission or processing of digital information with the correction of errors comprising:

a source of digital information;

a digital data handling system subject to the introduction of errors into the transmitted data;

means for arranging the information from said source of digital information in a series of parallel words;

means for forming one or more parity correction bits, associated with each word, with each correction bit being chosen to make the entire sum of the bits along at least two different vectors through the digital information, either odd or even, with every data bit being included in at least two such vectors;

means for transmitting the digital information including the correction bits over the data handling system, wherein occasional bits are reversed, thereby introducing errors into the digital information;

means for subsequently forming the sum along said vectors through the information and said parity correction bits and for forming an error flag bit pattern identifying vector sums including parity correction bits which do not conform to the established parity;

first error correction circuit means for correcting single errors within the digital information and correction bit pattern covered by said vectors, in accordance with said error flag bit pattern;

second error correction circuit means for correcting multiple errors within the digital information and correction bit pattern covered by said vectors in accordance with error flag bit patterns representing such multiple errors; and

a data utilization circuit connected to receive and utilize the corrected digital information.

4,435,808

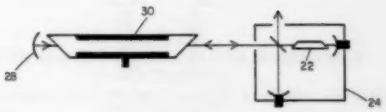
PRODUCTION OF RADIATION AT FREQUENCIES OF PRESELECTED ABSORBING RESONANCES AND METHODS USING SAME

Ali Javan, 12 Hawthorn St., Cambridge, Mass. 02139

Filed Jan. 22, 1981, Ser. No. 227,156

Int. Cl.³ H01S *3/113*

U.S. Cl. 372—11 **14 Claims**



1. An apparatus for producing radiation at a narrow frequency corresponding to a prescribed absorbing resonance, comprising,

a laser including a resonator cavity, an active laser medium within said cavity, laser pumping means and means to extract energy from said cavity,

an optical assembly having interfering optical paths, said assembly including beam splitting and recombining means for splitting a beam and for subsequently recombining the split beam thereby to provide transmitted and reflected rays, and

an absorption medium located in one of said interfering optical paths,

molecules of said absorption medium having at least one absorption resonance with a characteristically narrow absorption profile in a region of desired laser oscillation,

said optical paths being of substantially equal length whereby near white light interference occurs except for radiation in another of said optical paths lying at frequencies within said narrow profile of said absorption resonance because of the presence of said absorption medium,

said laser together with said optical assembly being arranged to introduce said radiation within said narrow profile into said resonator cavity of said laser during initial oscillation build up time and to cause laser oscillation to occur in a mode lying within said narrow profile while modes lying outside of said profile are inhibited.

4,435,809

PASSIVELY MODE LOCKED LASER HAVING A SATURABLE ABSORBER

Won-Tien Tsang, New Providence, and Jan P. van der Ziel, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 14, 1981, Ser. No. 302,028

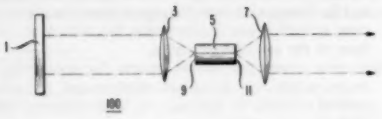
Int. Cl.³ H01S *3/19*

U.S. Cl. 372—49 **9 Claims**

1. A semiconductor laser having an active layer, first and

second cladding layers on opposed surfaces of said active layer,

characterized in that



said active layer further comprises a saturable absorption region, said saturable absorber region being a proton bombarded region.

4,435,810

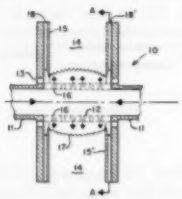
SELF-SUPPORTING LASER DIFFUSER FLOW ENERGIZER

Siegfried H. Hasinger, Dayton, Ohio; James M. Howard, Wales, Wis., and David K. Miller, Camp Springs, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1981, Ser. No. 300,763

Int. Cl.³ H01S *3/22*

U.S. Cl. 372—58 **4 Claims**



1. In a radial flow gas laser having means defining a laser cavity and means adjacent said cavity for supplying gaseous laser medium to said cavity at supersonic velocity directed radially outward and transverse of said cavity and means defining a diffuser chamber adjacent said laser cavity for diffusing said supersonic flow to an exhaust, said chamber defining means including a pair of spaced end walls defining a space therebetween for confining said radially outward flow therebetween, an improvement, comprising, means, adjacent each said end wall, defining a plurality of radially outwardly directed channels through which said cavity communicates directly with said exhaust.

4,435,811

CURRENT DISTRIBUTION FOR GLASS-MELTING FURNACES

Eugene C. Varrasso, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 26, 1982, Ser. No. 342,869

Int. Cl.³ C03B *5/027*

U.S. Cl. 373—39 **17 Claims**

1. An electrical furnace comprising:

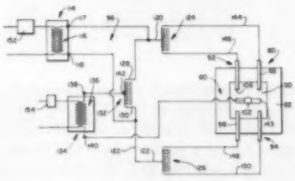
(a) a chamber adapted for holding a body of molten glass, said chamber having a bottom and a plurality of sides which contain said molten glass, and an opening in the top for supplying batch thereto to be melted into said glass;

(b) a first array of n spaced apart electrodes, wherein n is an integer greater than two, disposed within said chamber in electrical contact with said glass;

(c) a second array of n spaced apart electrodes disposed within said chamber in electrical contact with said glass, said second array being opposed to said first array,

(d) first means for supplying electrical current to said first and second arrays of electrodes to cause electrical current to flow between said arrays of electrodes through said glass to cause heating thereof;

(e) means for causing the flow of a substantially equal amount of current within each of said n electrodes within each array, said means comprising a first array of n−1 center tapped magnetic inductors, wherein n is an integer greater than two, each having two ends, the ends of each of the inductors within the first array being coupled to a different one of said n electrodes directly or indirectly through cascaded inductors within said first array of electrodes and the center tap of each inductor within the first array of inductors being coupled to a first output of said means for supplying electrical current and a second array of n−1 center tapped magnetic inductors, each having two ends, the ends of each of the inductors within the second array being coupled to a different one of said n electrodes directly or indirectly through cascaded induc-



tors within the second array of inductors and the center tap of each inductor within the second array of inductors being coupled to a second output of said means for applying electrical current;

(f) a current splitting inductor having a center tap and two ends, the ends of the current splitting inductor being respectively coupled to the first and second arrays of n−1 center tapped inductors;

(g) an arc electrode disposed above said glass for the purpose of causing electrical current to flow through the batch for melting the batch and heating the glass;

(h) second means for supplying electrical current to cause current to flow between said arc electrode and said arrays of electrodes through said glass, the center tap of said current splitting inductor being coupled to said second means for supplying electrical current; and

i means disposed in the bottom of said chamber for forming fibers from said molten glass.

4,435,812

ELECTRIC FURNACE CONSTRUCTION

Heinz Guido, Duisburg, and Hubert Wolfgarten, Oberhausen, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,329

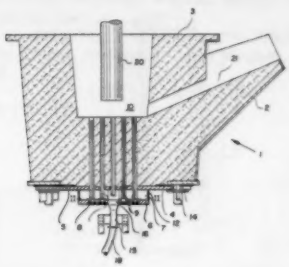
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106741

Int. Cl.³ F27D *1/00*

U.S. Cl. 373—72 **7 Claims**

1. An electric arc furnace comprising a housing, refractory within said housing defining a furnace hearth in said housing, a plurality of electrodes extending through said refractory into said hearth and having ends extending out of said housing, plate means including a plate spaced away from said housing and connected to the ends of said electrodes and defining a cooling space outside of said housing surrounding said elec-

trodes, means for circulating a cooling fluid into said space to cool the electrodes, and a plurality of air baffles disposed in



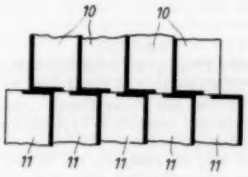
said cooling space for the directing air in a plurality of paths over said electrodes.

4,435,813

DC ARC FURNACE COMPONENT

Sven-Einar Stenkvist, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed May 20, 1982, Ser. No. 380,442
Claims priority, application Sweden, May 25, 1981, 8103268
Int. Cl.³ F27D *1/08*
U.S. Cl. 373—72 **4 Claims**



1. A DC arc furnace hearth at least partly comprising a brickwork formed by partially metal-cased bricks each having a metal casing covering only a part of the brick's surface, the surface having a recess formed in it and in which the casing is positioned flush with the surface so as to leave the balance of the brick's surface uncased, the bricks being laid so that throughout the brickwork the metal casings intercontact so as to cause the brickwork to be electrically conductive from its top to its bottom, and so that the bricks' uncased surfaces also intercontact so as to support the bricks in their layed positions in the event the metal casings become molten.

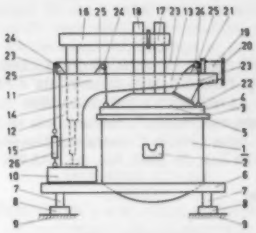
4,435,814

ELECTRIC FURNACE HAVING LIQUID COOLED VESSEL WALLS

Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,302
Claims priority, application Switzerland, Jan. 29, 1982, 552/82
Int. Cl.³ F27D *1/12*
U.S. Cl. 373—76 **9 Claims**

1. An electric furnace comprising:
a furnace vessel having wall parts;
liquid cooling means for cooling said wall parts, comprising,
cooling conduits extending substantially vertically in said wall parts, said cooling conduits connected in series in groups and having a cooling liquid flowing therein,
said cooling conduits arranged in two layers including an inner layer facing said furnace vessel and an outer layer disposed behind said inner layer relative to said vessel,
said conduits of said inner layer having U-shaped upper and lower ends to which the conduits of the outer layer are connected,



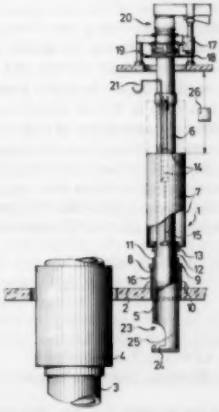
a distributing chamber communicating with the conduits of said outer layer and including at least one bypass opening for at least partially bypassing cooling fluid from at least one outer layer conduit to another outer layer conduit; and
said conduits of said inner layer embedded in and supported by a fireproof construction material.

4,435,815

METHOD AND APPARATUS FOR CHARGING A FURNACE

Knut Evensen, Oslo, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Apr. 14, 1982, Ser. No. 368,396
Claims priority, application Norway, Apr. 27, 1981, 811425
Int. Cl.³ F27D *3/10*
U.S. Cl. 373—81 **13 Claims**



11. A method for batchwise charging a furnace pot through a cover comprising the steps of:
(a) accumulating charge material in a charging tube having an opening therein, said charging tube being withdrawn from said furnace pot for receiving said charge material, said opening being sealed when said charge tube is in said withdrawn position;
(b) lowering at least a lower section of the charging tube through the cover and into the furnace pot, said opening being unsealed by the lowering of said tube thereby allow-

ing the accumulated material to flow into the furnace pot through said opening; and

(c) drawing said charge tube upwardly to its withdrawn position for receiving a subsequent batch of charge material.

4,435,816

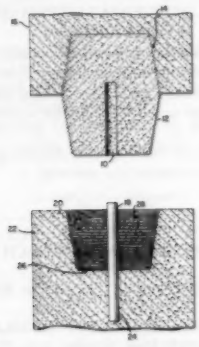
METHOD AND ARTICLE FOR PROTECTING TAPERED THREADED ELECTRODE JOINTS BY USE OF AN ALIGNMENT MECHANISM

Herman M. Belz, and Harry C. Stieber, both of Berea, Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,989

Int. Cl.³ H05B 7/14

U.S. Cl. 373—91 **13 Claims**



1. A method for joining two electrode sections to form or extend a carbon or graphite electrode column wherein each of said electrode sections is provided with a mating male nipple at one end and a female recess at the end opposite said nipple, which method comprises providing one of said electrode sections with a consumable centering pin axially disposed along the center line of said electrode section and providing the second electrode section which is to be joined to the first electrode section in a male to female engagement with a hole axially disposed along the center line of said second electrode section with the overall length of the centering pin being equal to or less than the depth of the hole and which hole is adapted to engage said centering pin when said electrode sections which are to be threaded together are brought together but prior to actual engagement of said threaded portions of said electrode sections.

4,435,817

CONTACT ASSEMBLY

Harald Krogsrud, Gjettum, Norway, assignor to Elkem a/s, Oslo, Norway

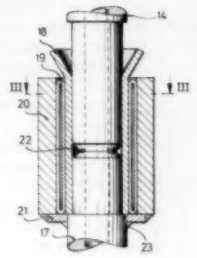
Filed Jul. 9, 1981, Ser. No. 281,689

Claims priority, application Norway, Jul. 25, 1980, 802266

Int. Cl.³ H05B 7/11

U.S. Cl. 373—103 **8 Claims**

1. In combination with an electrode holder assembly in which contact clamps are suspended by electrically-conducting pipes which are also adapted for transport of fluid therethrough; connection means for joining corresponding ends of said electrically-conducting pipes for continuity of electrical current conduction and fluid transport therethrough, said connection means comprising a sleeve of electrically-conductive material, said sleeve being adapted for receiving at each end thereof end portions of pipes to be joined; a hydraulically



activated cylindrical hose surrounding said sleeve; and an external casing disposed around said cylindrical hose.

4,435,818

METHOD AND APPARATUS FOR MONITORING THE MELTING PROCESS IN VACUUM ARC FURNACES

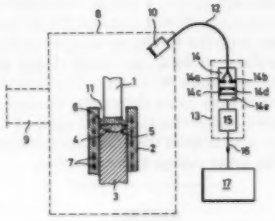
Otto Stenzel, Grundau, and Pierre Flecker, Alzenau, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,983

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120856

Int. Cl.³ H05B 7/144

U.S. Cl. 373—104 **10 Claims**



4. In a vacuum arc furnace having a vacuum housing, a crucible and an electrode in the vacuum housing, and means producing at least one arc between the electrode and a melt of the electrode material in the crucible for melting the electrode into melt, apparatus for monitoring radiation from the arc for melting the electrode to prevent breaking the crucible with the arc if it flashes over from the melt to the crucible, comprising:

analyzing means detecting at least one line in the spectrum of the radiation from the arc which is characteristic of the material of the crucible and not the melt for indicating vaporization of the crucible from the arc flashing over to the crucible; and

means responsive to the indicated vaporization of the crucible for quenching the arc to the crucible.

4,435,819

ELECTRICAL RESISTANCE FURNACES

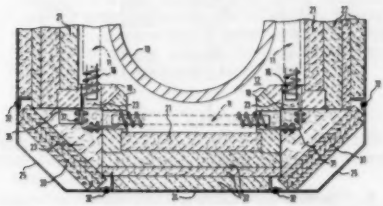
Alan W. Plume, Weybridge, England, assignor to A. W. Plume Limited, England

Filed Mar. 18, 1982, Ser. No. 359,580

Claims priority, application United Kingdom, Mar. 18, 1981, 8108444

Int. Cl.³ H05B 3/06

U.S. Cl. 373—119 3 Claims



1. An electrical resistance furnace comprising:
(a) an outer casing having four removable corner covers,
(b) corner fire-brick supports located in the casing adjacent its corners and having support apertures,
(c) a plurality of electrical resistance heating elements, each comprising a conductor wound upon a ceramic tube and having plates welded to both ends of the conductor,
(d) the heating elements extending horizontally between adjacent corner supports with the ends of the tubes supported in said support apertures in the corner supports and the plates located outside the corner supports,
(e) electrical connections between the plates,
(f) a crucible surrounded on all four sides by the heating elements,
(g) heat insulation located between the outer casing and the heating elements so as to surround the heating elements,
(h) said heat insulation having removable corner portions, and
(i) the arrangement being such that by removal of the appropriate corner covers of the casing and the corner portions of the insulation access may be gained from the exterior of the furnace to the said electrical connections and to both ends of any element to permit removal of the element.

4,435,820

CHANNEL INDUCTION FURNACES

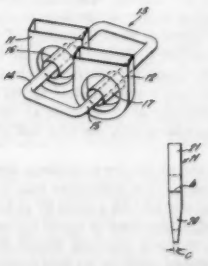
Christopher J. Edgerley, Northwich, England, assignor to The Electricity Council, London, England

Filed Sep. 21, 1981, Ser. No. 304,408

Claims priority, application United Kingdom, Sep. 24, 1980, 8030813

Int. Cl.³ H05B 5/02

U.S. Cl. 373—161 16 Claims



1. A channel induction furnace having a bath for containing molten metal with a channel forming a loop extending downwardly from the bath, a ferromagnetic core forming a closed magnetic circuit linked with the channel and an alternating-current energized coil on the core, wherein the channel is shaped so as to extend in an arcuate path around the coil and core at least in the region below the plane of the axis of the core, the channel having a radial width, measured outwardly from the axis of the core, which is several times the penetration depth in the molten metal for a current of the energizing frequency and wherein the width of the channel measured parallel to the axis of the core is tapered in the region where the channel is below the plane of the axis of the core, the tapering being such that the channel is wider near the core and narrower away from the core.

4,435,821

RECEIVER IN A FREQUENCY HOPPING COMMUNICATION SYSTEM

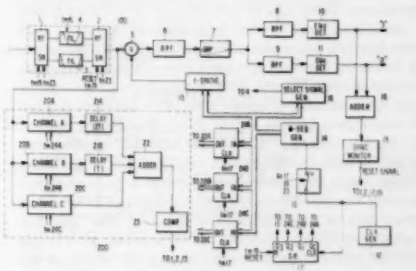
Satoaki Ito, and Hiroshi Harada, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,536

Claims priority, application Japan, Mar. 24, 1981, 56-42952; Mar. 24, 1981, 56-42953; Dec. 15, 1981, 56-202160; Dec. 15, 1981, 56-202161

Int. Cl.³ H04K 1/00; H04L 9/00

U.S. Cl. 375—1 13 Claims



1. A receiver in a frequency hopping communication system comprising:
filter means having a broad band-pass filter with a band characteristic including a spread spectrum bandwidth, a narrow band-pass filter having selectable band characteristics including bandwidths into which said spread spectrum bandwidth is divided, a band characteristic of said narrow band-pass filter being selected in response to a selection signal applied thereto, and means for making switch-over from said broad band-pass filter to said narrow band-pass filter in response to a synchronization detected signal applied thereto;
a code generator for generating code patterns to determine a time-sequential pattern of predetermined hopping frequencies;
a clock source for generating clock pulses for driving said code generator;
a frequency synthesizer for producing a signal of a frequency determined by an output signal from said code generator;
synchronization acquisition means for synchronizing the output signal from said frequency synthesizer and the output signal from said filter means to produce said synchronization detected signal when synchronization is set up;
selection signal generating means for generating said selection signal in response to the output signal from said code generator;
correlating means for correlating the output signals from

said filter means and said frequency synthesizer to remove the modulation of said frequency hopping; and

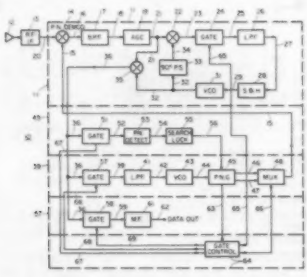
demodulating means for extracting an information signal from the output of said correlating means.

4,435,822

COHERENT SPREAD SPECTRUM RECEIVING APPARATUS

Billie M. Spencer; William S. Cady, both of Bountiful, and John W. Zscheile, Jr., Farmington, all of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed May 19, 1982, Ser. No. 379,595
Int. Cl.³ H04B *12/00*
U.S. Cl. 375—1 **9 Claims**



1. A coherent direct sequence spread spectrum receiver of the type adapted to receive a carrier signal that has been modulated by data and a pseudonoise code, comprising:

signal receiving means

carrier tracking loop means connected to said receiver means for coherently tracking the carrier signal,

said carrier tracking loop means comprising a pseudonoise demodulator at the input and a coherent detector at the output,

said pseudonoise demodulator having an input connected to said signal receiving means and having an output coupled to said coherent detector of said carrier tracking loop,

an output line coupled to said coherent detector for providing thereon detected pseudonoise code signals and data signals,

a code tracking branch coupled to said output line for coherently tracking the received pseudonoise code and for generating a clock signal and a replica signal of said received pseudonoise code,

a continuous running pseudonoise generator in said code tracking branch for generating said replica signals coupled to said pseudonoise demodulator,

first gating means in said carrier tracking loop means,

second gating means in said code tracking branch, and

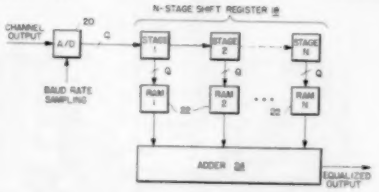
gate control means coupled to said code tracking branch for enabling said first gating means when said carrier tracking loop is tracking said carrier signal and for enabling said second gating means when said pseudonoise generator is tracking said received pseudonoise generated code on said output line.

4,435,823

ADAPTIVE EQUALIZER CAPABLE OF LINEAR AND NONLINEAR WEIGHTING

Robert C. Davis, Indialantic, and Gautam H. Thaker, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 29, 1980, Ser. No. 221,020
Int. Cl.³ H04B *3/18*
U.S. Cl. 375—14 **23 Claims**



1. An equalizer for reducing intersymbol interference in a signal received over a transmission channel comprising:

delay means for receiving said transmission channel signal and providing sequential Q-bit samples of said received transmission channel signal;

weighting means comprising a memory coupled to receive the Q-bit samples from said delay means, said memory having stored therein adaptive equalizing weighting values which are accessed in accordance with the Q-bit samples to provide weighted memory output words in response to the received Q-bit sample; and

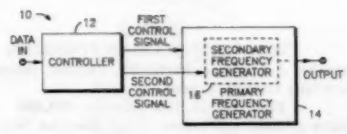
combining means for combining said weighted memory output words accessed from said memory, so as to equalize the received transmission channel signal.

4,435,824

COMMUNICATION SYSTEM HAVING IMPROVED DIFFERENTIAL PHASE SHIFT KEYING MODULATION

Brian W. Dellande, Austin, and Henry Wurzburg, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1982, Ser. No. 380,322
Int. Cl.³ H04L *27/10, 27/18*
U.S. Cl. 375—46 **9 Claims**



1. A communication system for generating an output signal of a selected primary frequency and having a plurality of bursts of digital data bits serially modulated thereon at said primary frequency during respective predetermined bit periods in order to provide differential phase encoding of an input signal while frequency modulating the output signal, comprising:

first control means for receiving the serial digital data bits and providing a start control signal and for providing a stop control signal in response to the failure to receive a digital data bit within the first half of any of the bit periods;

second control means for providing, during a control period corresponding to a respective one of said bit periods but preceding said one bit period by at least one-half said one bit period, a data control signal for each control period in response to each received digital datum having a first predetermined value or no data control signal in response to each received digital datum having a second predetermined value; and

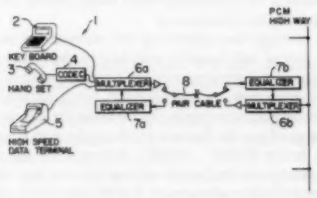
frequency generator means coupled to the control means, for generating a half cycle of the output signal having the same frequency as a last half bit of an immediately preceding burst of data bits in response to the start control signal, for generating a full cycle of said output signal at said primary frequency and in phase with the preceding half cycle of said output signal in response to the presence of each of said data control signals, for generating a half cycle of said output signal at a secondary frequency one-half said primary frequency and in phase with the preceding half cycle of said output signal in response to the absence of a data control signal during a control period, and for generating a stop control signal in response to the failure to receive a digital datum within a first half of any of the bit periods, wherein the output signal has a zero direct current component bit by bit.

4,435,825

CLOCK SIGNAL EXTRACTING CIRCUIT

Keiji Tomooka, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,379
Claims priority, application Japan, Feb. 27, 1981, 56-26956
Int. Cl.³ H04L *7/04*
U.S. Cl. 375—113 **6 Claims**



1. A clock signal extracting circuit comprising:

means for sampling and holding an input data signal in accordance with a predetermined sampling frequency to produce a train of sampled values;

means for supplying a signal at said sampling frequency to said sampling and holding means to control the timing of said sampling and holding operation;

means for subjecting the train of sampled values from said sampling and holding means to equalization and amplification;

means connected to receive the equalized and amplified train of sampled values from said equalization and amplification means for extracting and reproducing a clock signal therefrom;

means connected between said equalization and amplification means and said extracting and reproducing means for detecting a difference in voltage amplitude between a pair of those values of the equalized and amplified train of sampled values which appear immediately before and after the time when the sampled-value train has a peak value;

means for controlling said sampling frequency supplied from said sampling frequency supplying means to said sampling and holding means in accordance with the output of said difference voltage detecting means so that said difference voltage is made zero, thereby providing a clock signal frequency-synchronized with said input data signal as said clock signal from said extracting and reproducing means; and

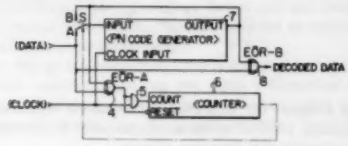
means connected to receive an output of said sampling frequency supplying means varying in accordance with the output of said difference voltage detecting means for determining the phase of said input data signal at which a peak of said input data signal is to appear, said phase determining means including means for applying information of the phase of said peak to said extracting and reproducing means so that said clock signal from said extracting and reproducing means is produced as a signal phase-synchronized with the peak of said input data signal.

4,435,826

FRAME SYNCHRONIZER

Yasuo Matsui, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,509
Claims priority, application Japan, Sep. 5, 1980, 55-122257
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—115 **6 Claims**



1. A frame synchronizer comprising:

a PN code generator having a feedback path for circulating the output of the generator therethrough to thereby generate a PN code cyclically in response to a data input to the frame synchronizer, said data input containing a PN code, said feedback path including switch means for enabling said PN code generator to alternately receive said data input and the output of said PN code generator;

a comparator for comparing said data input and said cyclically generated PN code from said PN code generator and generating an equal signal when the PN code in said data input is identical with said cyclically generated PN code;

a counter responsive to the output of said comparator for determining whether the time of continuation of said equal signal is as long as a predetermined time period and for generating a control signal when said equal signal is determined to continue for said predetermined time period, said switch means being responsive to said control signal from said counter for enabling said PN code generator to receive the output thereof for said cyclic generation of the PN code by said PN code generator; and

a coincidence circuit for comparing said data input and the output of said PN code generator and for producing a decoded data when said data input and the output of said PN code generator are coincident with each other.

4,435,827

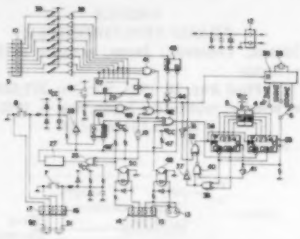
READ CLOCK PULSE CONTROLLER

Yoshikazu Kuze, 31-3, Higashimagome 1-chome, Ohta-ku, Tokyo, Japan (143)

PCT No. PCT/JP79/00277, § 371 Date Jun. 26, 1981, § 102(e) Date Jun. 26, 1981, PCT Pub. No. WO81/01339, PCT Pub. Date May 14, 1981
PCT Filed Oct. 30, 1979, Ser. No. 279,979
Int. Cl.³ H03K *21/30*
U.S. Cl. 377—44 **2 Claims**

1. A read clock pulse controller for a read only sequence controller for a read-only memory comprising: a read clock pulse generating circuit (30); a select switch (6) for selecting the frequency of the read clock pulse; a presettable counter (33, 34) for counting the read clock pulse; a preset code switch (4, 5) for selecting the number of the read clock pulses counted by said presettable counter; a binary counter (29) connected to the output of said presettable counter; said presettable counter increments said binary counter by one whenever the presetted number of read clock pulses have been counted and the output of said binary counter is connected to the address lines of said read-only memory; a start switch (7) to initiate counting by applying a signal to a gate circuit (26); said gate circuit generating a signal to reset said binary counter to the zero state, to

reset said clock pulse generating circuit to the zero state, and to preset the value in said presettable counter; a circuit means connected to an outer abnormality detecting circuit for generating a signal for inhibiting the counting operation of said presettable counter when an abnormality is detected by said outer abnormality detecting circuit.

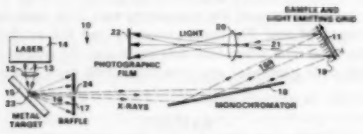


4,435,828

FLUORESCENCE LASER EXAFS

Harold M. Epstein; Robert E. Schwerzel, both of Columbus, and Paul G. Andrus, Powell, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 14, 1982, Ser. No. 368,256
Int. Cl.³ G01N *23/22*
U.S. Cl. 378—49 28 Claims



1. Apparatus for obtaining EXAFS data of a material, comprising:

means for directing radiant energy from a laser onto a target in such manner as to produce X-rays at said target of a selected spectrum and intensity suitable for obtaining a fluorescence EXAFS spectrum of a material;

means for directing said X-rays from the target onto spectral-dispersive means so located as to direct spectrally-resolved X-rays therefrom onto a sample of material;

means for absorbing fluorescence X-rays emitted from said sample of material and for emitting light that is resolved spatially so as to correspond to the wavelength of the spectrally-resolved X-rays striking said sample and whose intensity at any point along the spatial light distribution corresponds to the intensity of said fluorescence X-rays produced by a particular wavelength of said incoming X-rays;

means for directing said emitted light onto recording means so as to obtain a spectrum of the emitted light; and

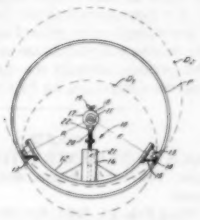
means for obtaining a reference spectrum of said spectrally-resolved X-rays.

4,435,829

APPARATUS FOR RADIOGRAPHIC EXAMINATION OF PIPE WELDS

Dan R. Siler, Clinton, and Harold D. Trimble, Riverdale, both of Utah, assignors to Johnson Service Company, Milwaukee, Wis.

Continuation of Ser. No. 265,419, May 19, 1981, abandoned.
This application May 12, 1983, Ser. No. 492,692
Int. Cl.³ B62B *13/16*; G01N *23/02*
U.S. Cl. 378—60 5 Claims



1. An apparatus for transporting and locating a probe for examination of a circumferential weld joining two sections of cylindrical pipe comprising:

a. a carriage for supporting the examination probe;

b. a pair of ball transfers attached to the underside and adjacent each lateral edge of the carriage, with the line defined by each pair of ball transfers lying parallel to the pipe centerline, to support the carriage for longitudinal movement along the bottom inside surface of a pipe section;

c. a probe fixture centrally mounted on the carriage and having a probe holder adjustably attached thereto; and,

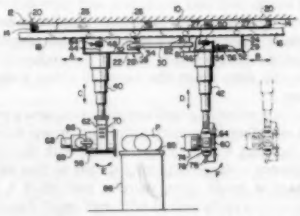
d. probe height adjustment means attached to and extending downwardly from the probe holder into the probe fixture, the height adjustment means being manually operable for vertical movement with respect to the probe fixture for selective positioning in a plane through the pipe centerline equidistant from the ball transfers.

4,435,830

X-RAY APPARATUS

Hirotsugu Suzuki, Ootawara; Sigeru Urata, and Kanichi Okabe, both of Nasu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 20, 1981, Ser. No. 323,499
Claims priority, application Japan, Nov. 21, 1980, 55-164325
Int. Cl.³ A61B *6/02*
U.S. Cl. 378—197 15 Claims



1. An X-ray apparatus, comprising:

an X-ray source;

an X-ray imaging device in confronting relation to said X-ray source;

a first longitudinally movable support, said X-ray source being coupled with and supported by said first support;

a second longitudinally movable support, said X-ray imaging

device being coupled with and supported by said second support;

a first movable base on which said first support is mounted;

a second movable base independent of said first movable base on which said second support is mounted, each of said first and second movable bases having a mounting base for mounting each of said first and second supports, a plurality of wheels and a guide for moving said mounting base by said wheels; and

a connector releasably interconnecting said supports at a predetermined distance apart for allowing said supports to be operated in unison when interconnected.

4,435,831

METHOD AND APPARATUS FOR TIME DOMAIN COMPRESSION AND SYNTHESIS OF UNVOICED AUDIBLE SIGNALS

Forrest S. Mozer, 38 Somerset Pl., Berkeley, Calif. 94707

Filed Dec. 28, 1981, Ser. No. 335,310
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—30 **12 Claims**

1. A method for synthesizing a unit of a time domain information signal substantially lacking periodic characteristics and having a power spectrum substantially invariant over the duration of said unit, said method comprising the steps of:

storing in memory means a representative small segment of said information signal unit; and

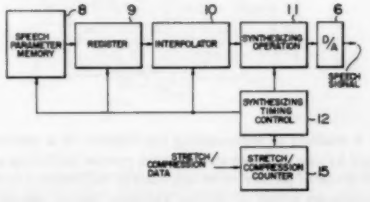
repetitively reproducing at least a portion of said segment a sufficient number of times to reconstruct said information signal unit from said small segment, said reproducing step commencing and terminating with different points in said segment at each repetition thereby to provide a unit substantially free of noticeable periodicity.

4,435,832

SPEECH SYNTHESIZER HAVING SPEECH TIME STRETCH AND COMPRESSION FUNCTIONS

Akihiro Asada; Kazuhiro Umemura; Tadashi Saito, and Tohru Sampei, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,222
Claims priority, application Japan, Oct. 1, 1979, 54-125416
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—34 **14 Claims**



1. A speech synthesizer comprising:

(a) speech parameter providing means for providing n-linear predictive coefficients sampled from segmental waveforms truncated from natural speech at a given time interval, voice/unvoice judging information, pitch information, and volume information;

(b) speech reconstruction means including a speech synthesizing filter whose coefficients change at given intervals on the basis of the linear predictive coefficients to synthesize and provide speech in accordance with the speech parameters delivered from speech parameter providing means;

(c) interpolating means provided between said speech reconstruction means and said speech parameter providing means, for interpolating the linear predictive coefficients inputted at given intervals, at a time interval of at least 10 ms or less and for supplying the interpolated linear predictive coefficients to said speech reconstruction means; and

(d) timing control means for producing a synthesizing timing signal responsive to a signal for setting a speech reproduction speed and supplying the synthesizing timing signal to said speech parameter providing means and said interpolating means for changing the time interval of interpolation of the interpolating means;

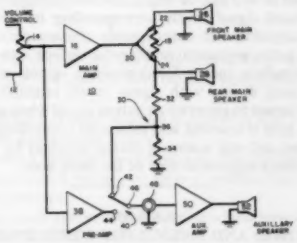
whereby the speech outputting time is stretchable and compressible without changing the pitch information provided by said speech parameter providing means while ensuring reconstruction of a smooth speech.

4,435,833

FADE CONTROL CIRCUIT FOR AUXILIARY AMPLIFIER

Narendra C. Thakkar, Roselle, Ill., assignor to International Jensen Incorporated, Schiller Park, Ill.

Filed Jun. 2, 1982, Ser. No. 384,404
Int. Cl.³ H03G *3/02*
U.S. Cl. 381—109 **9 Claims**



1. In a second reproduction system comprising a signal source, a main amplifier coupled to the signal source, first and second main speakers, an auxiliary amplifier, and an auxiliary speaker coupled to and driven by the auxiliary amplifier, the improvement comprising:

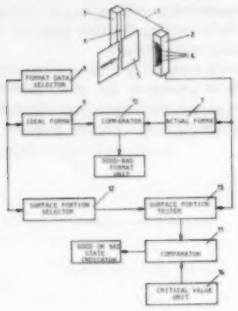
a fader control variable resistor having a first terminal coupled to the main amplifier, a second terminal coupled to the first main speaker, and a third terminal coupled to the second main speaker, said fader control variable resistor comprising means for selectively varying the resistance between the first and second terminals and between the first and third terminals in order to control the power distribution between the first and second main speakers;

a voltage divider coupled to the second terminal of the fader control variable resistor, said voltage divider having an intermediate node coupled to an input terminal of the auxiliary amplifier such that power distribution to the auxiliary speaker is proportional to power distribution to the first main speaker.

4,435,834
METHOD AND MEANS FOR DETERMINING THE STATE AND/OR GENUINENESS OF FLAT ARTICLES

Günter Pauli, Eichenau; Günter Krause, and Erwin Loh, both of Munich, all of Fed. Rep. of Germany, assignors to Gao Gesellschaft für Automation and Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 45,802, Jun. 5, 1979, abandoned. This application Apr. 23, 1982, Ser. No. 371,425
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824849
Int. Cl.³ G06K 9/00
U.S. Cl. 382—7 36 Claims



1. Apparatus for determining the characteristics of a generally rectangular bank note or the like having a pair of end edges and a pair of side edges, scanning means including a plurality of sensor means, said scanning means being operable for sensing the characteristics of a bank note at a plurality of points within a segmental surface area thereof arranged in rows parallel to one of said pair of edges and columns parallel to the other of said pair of edges, reference means for establishing threshold signal levels corresponding to thresholds between acceptable and unacceptable characteristics at points within a certain segmental rectangular surface area of the bank note, comparison means for comparing signals produced by said scanning means with signal levels established by said reference means to generate an output signal when an unacceptable bank note is scanned, and means for controlling said reference means and said scanning means to select for scanning a predetermined segmental area of the bank note.

4,435,835
METHOD AND DEVICE FOR DETECTING THE POSITION OF AN OBJECT

Hiroshi Sakow, and Seiji Kashioka, both of Hachiouji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1981, Ser. No. 247,073
Claims priority, application Japan, Mar. 24, 1980, 55-36070
Int. Cl.³ G06K 9/32
U.S. Cl. 382—8 4 Claims

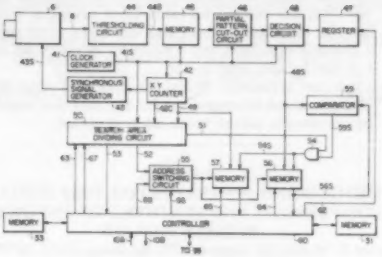
1. A position detecting method for detecting the position of an object by scanning of the object with an image pickup device comprising:

storing in advance of scanning of the object positional information of at least one type of standard pattern which exists in a whole region including all pickup regions scanned by the image pickup device at respective supply deviations of the object, said whole region being composed of a plurality of said pickup regions;

scanning a pickup region by the image pickup device at a supply position of the object;

extracting positional information of the at least one standard pattern from the image obtained by the scanning of said pickup region; and

comparing the positional information extracted from the scanned pickup region with positional information of the whole region stored in advance of the scanning of the object to determine which part of the whole region the

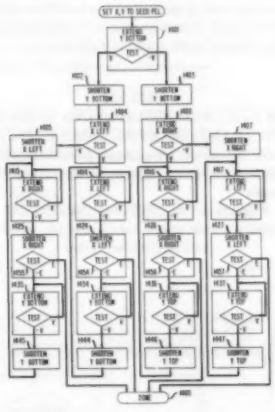


said pickup region lies in and to detect the position of the object from positional relationship of said scanned pickup region within the whole region.

4,435,836
TECHNIQUE FOR EXTRACTING FEATURES FROM IMAGES

Steven M. Rubin, Los Altos, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1981, Ser. No. 311,791
Int. Cl.³ G06K 9/12
U.S. Cl. 382—27 15 Claims



1. A method of representing the features of a portion of a picture by one or more strokes, said picture including a rectilinear array of picture elements, each of said strokes including a contiguous group of picture elements having similar attributes, including the steps of:

(a) hypothesizing the existence of a stroke including a beginning pel and at least one additional pel;

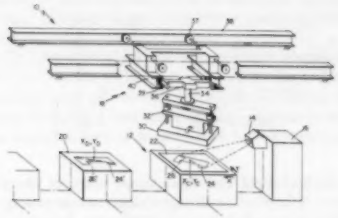
(b) simultaneously testing a group of at least two pels contained in the hypothesized stroke defined in step (a) to generate a success indication if all of the pels in said group possess similar attributes; and

(c) repeating step (a) for other hypothesized strokes.

4,435,837
PATTERN RECOGNITION AND ORIENTATION SYSTEM

Frederick H. Abernathy, Auburndale, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Mar. 5, 1981, Ser. No. 240,878
Int. Cl.³ G06K 9/32
U.S. Cl. 382—41 4 Claims

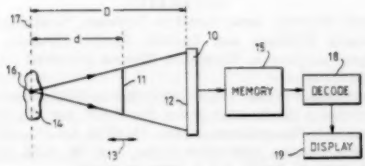


1. A method for recognizing a flat piece of cloth comprising
placing said piece on a viewing surface within a field of interest having perpendicular coordinate axes,
generating image signals corresponding to the existence or nonexistence of said piece in discrete areas of said field, said discrete areas being arranged in rows and columns along said axes,
processing said image signals to obtain observed moment signals representative of the first (area) and the second (sum of the products of inertia I_{xx}, I_{yy}) moments of said piece,
generating desired signals for the corresponding first and second moments of a desired piece,
identifying said piece by comparing said observed moment signals with said desired moment signals, and
generating a default signal when a difference between said observed and desired signals exceeds a certain limit.

4,435,838
METHOD AND APPARATUS FOR TOMOGRAPHICAL IMAGING

Alexander R. Gourlay, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,349
Claims priority, application European Pat. Off., Mar. 30, 1981, 81301382.8
Int. Cl.³ G01T 1/00; G03B 41/16
U.S. Cl. 382—68 10 Claims

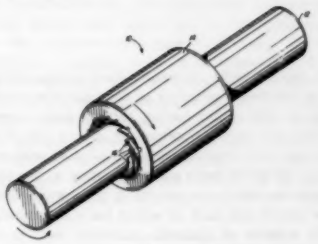


6. In an apparatus for tomographically imaging different selected planes of a three-dimensional object by detecting radiation from said object after the passage of the radiation through a coded aperture mask, wherein an image of the radiation of a selected plane sensed by a detector over a period of time is stored, and the decoding of said selected plane is by a correlation process appropriate to the size of the shadow of said mask cast on said detector by points in said selected plane, the improvement comprises:
means for adjusting the position of at least one of said object, said mask, or said detector to select each of said different selected planes of said object to be imaged in such a manner that the ratio D/d is a constant, where D is the distance from said selected plane to the plane of said detector, and d is the distance from said selected plane to the plane of said mask; and
means for decoding, using a fixed decoding process, each of said selected planes of said object.

4,435,839
FOIL BEARING RUBBING SURFACE COATING APPLICATION METHODS

Alston L. Gu, Huntington Beach, and Alexander Silver, Tarzana, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 21, 1982, Ser. No. 420,663
Int. Cl.³ F16C 1/24, 33/00; B05D 3/02, 3/12
U.S. Cl. 384—103 29 Claims



1. A method of applying a dry lubricant coating to a rubbing contact surface of a bearing, said method comprising the steps of:
(a) providing a coating mixture comprising a dry lubricant material and a liquid binder;
(b) applying a multiplicity of subcoats of said mixture to the rubbing contact surface to form a multilayered lubricant coating thereon;
(c) curing each successive subcoat at a first temperature to individually solidify the subcoats;
(d) deroughening the surfaces of selected ones of the subcoats positioned at predetermined thickness intervals of said multilayered coating; and
(e) curing the multilayered coating at a second temperature substantially higher than said first temperature.

2. The method of claim 1 further comprising the step of (f) applying a dry lubricant material upon the surface of the cured multilayered coating.

3. The method of claim 2 wherein said step (d) includes deroughening the surface of the last-applied subcoat, and wherein said step (f) is performed by burnishing a dry lubricant powder into said last-applied subcoat prior to the deroughening of its surface.

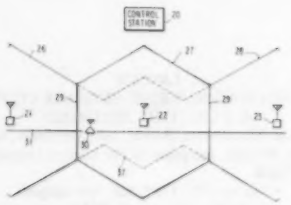
4. The method of claim 1 wherein said step (a) is performed by providing a coating mixture comprising graphite fluoride (CFx) powder and polyimide varnish.

5. The method of claim 1 wherein said step (a) is performed by providing a coating mixture comprising graphite fluoride (CFx) powder, polyimide varnish, an N-methylpyrrolidone and xylene thinning liquid, and a fluorocarbon solution wetting agent.

4,435,840
RADIO MOBILE COMMUNICATION SYSTEM WHEREIN PROBABILITY OF LOSS OF CALLS IS REDUCED WITHOUT A SURPLUS OF BASE STATION EQUIPMENT

Junichiroh Kojima, and Kenji Mizoe, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,367
Claims priority, application Japan, Jun. 22, 1981, 56-95196; Mar. 19, 1982, 57-44897; Apr. 5, 1982, 57-57071
Int. Cl.³ H04B 1/00
U.S. Cl. 455—33 5 Claims



1. In a mobile radio communication system comprising a control station and a plurality of base stations controlled by said control station and having service areas, respectively, each service area partly overlapping at least one of the other service areas, each base station being allotted with a plurality of channels for use in radio communication with a plurality of mobile stations which are present in the service area of said each base station and each of which has a communicable distance, the number of channels currently used in the radio communication defining a current traffic for said each base station, the improvement wherein:

said control station comprises:

threshold means for generating a threshold signal representative of a threshold traffic predetermined for each base station;

measuring means coupled to said base stations for measuring the current traffics for the respective base stations to produce a plurality of traffic signals representative of the measured current traffics, respectively; and

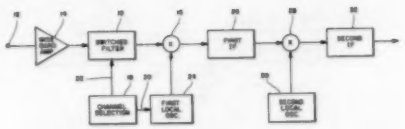
monitoring means coupled to said base stations and responsive to said threshold signal and said traffic signals for monitoring the measured current traffics with at least one threshold traffic predetermined for said base stations to supply a traffic adjusting signal to a particular one of said base stations when the current traffic defined for said particular base station exceeds the threshold traffic predetermined therefor and furthermore when the current traffic defined for an adjacent one of said base stations, the service area of whichpartly overlaps the service area of said particular base station, does not exceed the threshold traffic for said adjacent base station;

said system further comprising varying means operable in at least a predetermined one of first and second modes of operation in response to said traffic adjusting signal, said varying means varying the service area of said particular base station in said first mode of operation, said service area being defined by each base station's transmission output power, said varying means varying, in said second mode of operation, the communicable distance of each mobile station present in the service area of said particular base station.

4,435,841
COMMUNICATIONS RECEIVER HAVING A SWITCHABLE FILTER INPUT STAGE

Pierre Dobrovolny, North Riverside, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 1, 1982, Ser. No. 353,694
Int. Cl.³ H04B 1/26; H03H 7/00
U.S. Cl. 455—180 17 Claims



1. A multichannel communications receiver characterized by a reduced level of nonlinear distortion comprising:

an input terminal for receiving signals broadcast over a plurality of communication channels;

channel selection means developing a first control signal representing a selected one of said plurality of channels and a second control signal representing a band of channels encompassing said selected channel, said band of channels having a bandwidth less than said plurality of channels;

an input stage coupled to said input terminal comprising a plurality of non-tunable circuit components including switchable filter means responsive to said second control signal for assuming a highpass filter characteristic or a lowpass filter characteristic, said filter means comprising an arrangement of inductors and capacitors, a first switching means and a second switching means being responsive to said second control signal for causing said inductors and capacitors to assume said highpass filter characteristic or said lowpass filter characteristic, at least one of said switching means being characterized by a parasitic reactance coupled across said filter means, said receiver comprising compensating means coupled across said filter means for reducing the effect of said parasitic reactance; and

frequency conversion means coupled to the output of said input stage and responsive to said first control signal for processing the passed band of channels so as to develop an output signal having a predetermined frequency representing only said selected channel.

4,435,842
PROGRAMMABLE CHANNEL SELECTING APPARATUS

Kuzuaki Mayumi, Joyo; Yoshihiro Fujiwara, Hirakata; Toshio Tokuda, Hirakata, and Toshiaki Suzuki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 192,489, Oct. 1, 1980, abandoned, which is a continuation of Ser. No. 5,178, Jan. 22, 1979, abandoned. This application Mar. 11, 1982, Ser. No. 357,092
Claims priority, application Japan, Jan. 26, 1978, 53-8157; Jul. 7, 1978, 53-83385; Jul. 7, 1978, 53-83392
Int. Cl.³ H04N 5/76; H04B 1/16
U.S. Cl. 455—181 2 Claims

1. A programmable channel selecting apparatus for enabling a channel preselecting and an instant channel selecting operation for an electronic tuner, comprising:

a plurality of manually-operable channel-selecting switches and a channel indicator means corresponding respectively to a plurality of channels to be selected;

a channel selection circuit;

a channel preselecting means;

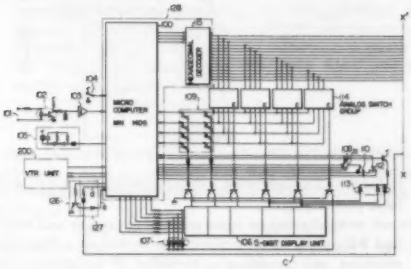
an inhibit means for preventing disturbance of a selected channel;

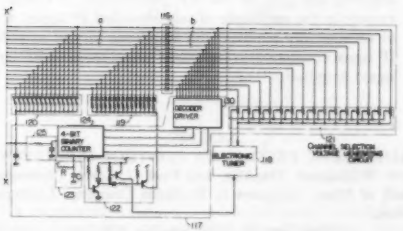
common signal lines connecting said channel-selecting switches, said channel selection circuit and said channel indicator means respectively, and said channel-selecting switches, said channel preselecting means and said channel indicator means respectively and,

clock means for providing data representing current time;

said channel selection circuit including means for generating and holding a channel selecting signal corresponding to any one of said switches which is manually operated, said channel selecting signal being immediately applied to said electronic tuner when generated;

said channel preselecting means including a manually-operable input switch means for inputting a channel preselecting time, and microcomputer means including memory means for storing data representing a channel preselecting time inputted by said input switch means together with a





signal indicative of a channel preselected by any one of said channel-selecting switches, said microcomputer means detecting when a current time from said clock means is coincident with data representing a channel preselecting time stored in said memory means and for causing said channel selection circuit to generate and hold a channel selecting signal corresponding to the preselected channel;

said inhibit means being responsive to said microcomputer means for preventing said channel selection circuit from being influenced by the channel preselecting operation; and,

said channel indicator means differentially indicating at least one channel corresponding to and according to at least one of the channel selecting signals held by said channel selection circuit and the preselected channel indicating signal stored by said memory means.

4,435,843

FM RECEIVER FOR GENERAL PROGRAMS AND SPECIAL ANNOUNCEMENTS

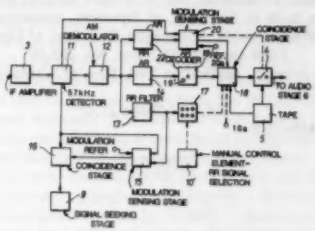
Norbert Eilers, Hildesheim, and Peter Brügas, Itzum, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,654

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121088

Int. Cl.³ H04B 1/16

U.S. Cl. 455—205 **31 Claims**



26. For use in an FM radio receiver having a tuner, an RF stage, an output audio stage including switching means switchable among various audio signal sources in addition to the FM receiver, the improvement comprising means for detecting total amplitude modulation of an auxiliary subcarrier of a preselected frequency value by at least two distinct recognition signals at two distinct frequencies and for producing an output when the modulation by the two recognition signals exceeds a predetermined value, and means responsive to the output from said means for detecting for controlling said switching means to connect the receiver to its audio stage when said modulation above a predetermined value is detected.

4,435,844

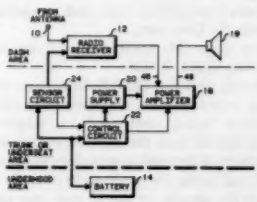
REMOTE CONTROL CIRCUIT

Jerome D. Meyerhoff, Buffalo Grove, Ill., and Steven E. Forshay, Ardmore, Pa., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 14, 1981, Ser. No. 301,868

Int. Cl.³ H04B 1/10, 1/16

U.S. Cl. 455—218 **8 Claims**



1. A control system for controlling the operation of a remote unit by detecting a change of operational mode of a control unit, the system comprising:

a control unit;

a power supply line for supplying power from an external source to the control unit; and

a remote unit including;

a free-running oscillator having a tuned circuit, said control unit power line being coupled through the tuned circuit to the control unit, the operational mode of the control unit as indicated by the operative condition of the power supply line affecting the function of the oscillator;

a detection circuit coupled to the tuned circuit for detecting changes in oscillator functioning and providing a control signal in response to said changes; a controlled power supply coupled to the external power source; and

a control stage responsive to said control signal and coupled to the controlled power supply for controlling the provision of power to a portion of the remote unit.

4,435,845

AUTOMOBILE RADIO AND TAPE CASSETTE SWITCHING APPARATUS

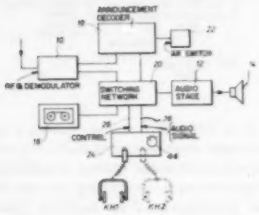
Horst Timm, Hildesheim, and H. Eckard Kruger, Hildesheim-Sorsum, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,417

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126117

Int. Cl.³ H04B *1/20*

U.S. Cl. 455—228 **8 Claims**



1. Automobile radio-tape reproducing equipment combination having

a radio frequency and demodulation stage (**10**) providing radio audio signals;

a magnetic tape system (**16**) providing tape audio signals;

an announcement information decoder (**18**) coupled to said radio frequency and demodulation stage for decoding special announcement code signals and providing an announcement recognition (AR) signal;

an audio stage (**12**);

a loudspeaker (**14**) coupled to said audio stage;

and a multiple switching network (**20**) coupled to said radio frequency and demodulation stage and said magnetic tape system and connected to and controlled by the announcement information decoder and coupled to the audio stage for providing output signals controlling audio reproduction of special announcement upon decoding of the announcement recognition code, and comprising, in accordance with the invention,

an accessory stage (**24**) having at least one earphone connecting plug (KH1, KH2);

and a switching network (**20*a***) forming part of the multiple switching network, and a selector switch (**44**), the switching network being controlled by selectively enabled switching signals from the selector switch and the special announcement information decoder (**18**) to control, selectively, circuit paths for application of radio audio signals, or tape audio signals, to the at least one earphone plug, independently of reproduction of special announcements by said loudspeaker upon recognition of an announcement recognition (AR) signal.

4,435,846

AUTOMATIC GAIN CONTROL OF A SINGLE GATE GAAS FET AMPLIFIER

Volker B. Weise, Redwood City, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Apr. 8, 1982, Ser. No. 366,495

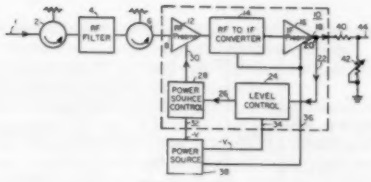
Int. Cl.³ H04B *1/16*; H03G *3/20*

U.S. Cl. 455—253 **4 Claims**

1. In a radio receiver operating in the GHz radio frequency (RF) range, and adapted to receive a modulated RF input signal, an automatic gain control (AGC) circuit comprising;

a controllable power source having a control input and including means for supplying direct current (DC) operating voltage between a supply line and a ground plane, said DC operating voltage having a magnitude;

an RF preamplifier which includes a single GaAs FET having gate, drain and source electrodes, and biasing means connected to said DC operating voltage, said gate electrode being adapted to receive said RF input signal, said drain electrode being AC isolated and DC connected to said ground plane, and said source electrode being connected to said biasing means, said FET providing an amplified RF signal at the drain electrode, the RF preamplified gain varying in response to variations in the magnitude of the DC operating voltage supplied by said controllable power source;



circuit means having an input adapted to receive said amplified RF signal, said circuit means including a fixed gain amplifier, and providing an amplified IF signal at an output;

a level control circuit having an input adapted for connection to the output of said circuit means, said level control circuit being responsive to the amplitude of said amplified IF signal so as to provide a variable DC control signal to the control input of said controllable power source, whereby the gain of the RF preamplifier is varied inversely to the amplitude of said amplified IF signal, so as to substantially maintain the amplitude of said amplified IF signal constant over a predetermined range of RF input signal amplitudes.

4,435,847

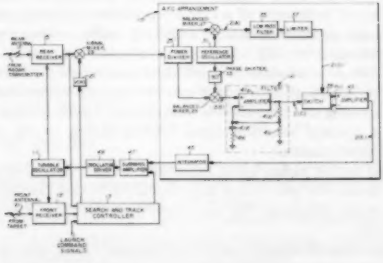
AUTOMATIC FREQUENCY CONTROL CIRCUITRY

James Williamson, Franklin, and Paul G. Crete, Chelmsford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 16, 1976, Ser. No. 650,521

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—260 **5 Claims**



1. In a heterodyne receiver wherein the frequency of a tunable first local oscillator is to be maintained at a frequency offset by a predetermined amount from the frequency of a

received signal, improved frequency control circuitry for such oscillator comprising:

(a) quadrature detection means, responsive to an intermediate frequency signal corresponding to a received signal and to the output of a reference oscillator, for producing a first and a second difference signal, each one being indicative of a difference in phase between the intermediate frequency signal and the output of the reference oscillator;

(b) filter means, responsive to the first and the second difference signals out of the quadrature detection means, for converting the first and the second difference signals to, respectively, a control signal and an error signal having the same sense as the control signal;

(c) correction signal generating means, responsive to the control signal and to the error signal out of the filter means, for producing a correction signal having an amplitude and sense determined by the error signal; and,

(d) means, responsive to the correction signal out of the correction signal generating means, for changing the phase of the tunable first local oscillator until the second difference signal is indicative of a difference in phase of 90° between the intermediate frequency signal and the output of the reference oscillator.

4,435,848

STRIPLINE MICROWAVE BALANCED MIXER CIRCUIT

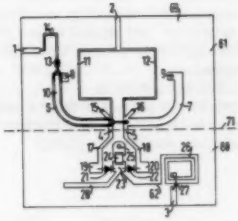
Siegfried Sedlmair, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,515

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117080

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—327 **16 Claims**



1. A microwave balanced or push-pull mixer circuit for an operating frequency formed in stripline technology having first and second input terminals and an intermediate frequency signal terminal each having an impedance Z_0 comprising, a differential transformer which for applying two input voltages to be mixed through said first and second input terminals with said first one connected through two quarter wave length striplines to first and second transformer output terminals and said second input terminal connected to said second transformer output terminal through the inner conductor of an arcuate-shaped coaxial line, an arcuate-shaped stripline connected to the second transformer output terminal and with one end connected by a through-contact to a ground plate, and the other outer end connected to the first transformer output terminal, first and second semi-conductor diodes connected together with a common terminal, with said first one mounted between the first transformer output terminal and an intermediate frequency signal output terminal and said second diode mounted between the second transformer output terminal and the intermediate frequency signal output terminal and poled differently than said first diode relative to the intermediate frequency signal output, means for blocking the frequency range of the two input voltages connected ahead of said diodes and for matching to the impedance Z_0, two symmetrical striplines (17, 18) connected between said first and second transformer output terminals (4, 5) and the non-common terminals (19, 20) of said first and second diodes, and said striplines being enlarged near the noncommon terminals so that parallel capacitances are formed in the area of said diode terminals (19, 20), and the arcuate-shaped coaxial line (10) and the stripline (7) extending symmetrically relative thereto and which extend from said first and second differential transformer output terminals (4, 5) are designed to be shorter than a quarter wave length at the operating frequency so that parallel inductances are formed, and tuned such that the impedances of said first and second diodes at the differential transformer output terminals (4, 5) are respectively transformed to the impedance Z_0, the width of said two quarter wave length striplines (11, 12) is selected such that they have an impedance of $Z_0 \cdot \sqrt{2}$, another stripline (14) mounted between said inner conductor (13) of the coaxial line (10) on the end away from the differential transformer output terminals (4, 5) and the second input terminal (1), so that the overall length of the coaxial line (10) and of said another strip-line (14) equals a quarter wave length and the impedance of these two lines is equal to $Z_0 \cdot \sqrt{2}$, and blocking the frequency range of the two input signals, a blocking circuit composed of a stripline coil (26) mounted between said common diode terminal (23) adjacent the intermediate frequency signal output terminal (3), said blocking circuit selected such that, at the desired intermediate frequency, the impedance Z_0 occurs at the intermediate frequency signal output terminal (3).

4,435,849

OPTICAL TRANSMISSION SYSTEM

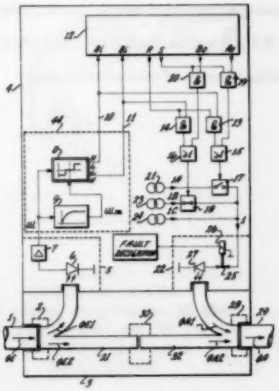
Herwig Ilgner, Rosbach, and Utz W. Barth, Frankfurt, both of Fed. Rep. of Germany, assignors to Hartmann & Braun AG, Frankfurt, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,987

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007958

Int. Cl.³ G02B *5/14*

U.S. Cl. 455—601 **14 Claims**



1. In an optical transmission system, having a plurality of signal-regenerating units, at least one of said units including:

an optical branching unit having a first portion in order to provide attenuated through-transmission of a portion of an optical signal received, this through-transmission continuing irrespective of failure of said unit; a second portion extracting a component from the received optical signal; and a third portion for reintroducing an optical signal and combining it with the through-transmitted signal, there being first circuit means for convertinng the extracted portion into an electrical signal, there further being a

source for producing radiation, the radiation being a reconstituted signal, the improvement comprising:

second circuit means connected to the first circuit means and responsive to the contour of the electrical signal representing a three-level-per-bit code, the middle level corresponding to nonzero light, but also to a zero data flow condition when persisting, and producing multi-bit logic signals wherein a particular bit combination represents said middle level, the second circuit means including threshold means providing two threshold levels against which said electrical signal is referenced and having values respectively larger and smaller than an average of said electrical signal which average corresponds to a signal produced in the absence of data, in order to distinguish between three ranges for the electrical signals, resulting in three distinct logic states, the second circuit means further including circuit means (i) responsive to the average of said signal, and circuit means (ii) for shifting the threshold values up or down, corresponding to changes in the average; and

third circuit means connected to be responsive to the logic signals as sequentially provided and

producing a three-level control for the radiation as produced by the said source, the middle level when persisting representing absence of reconstituted data.

4,435,850

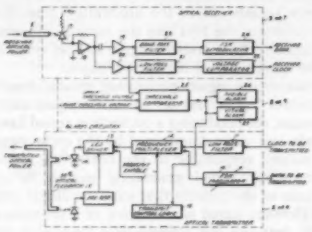
SECURE FIBER OPTIC DATA TRANSMISSION SYSTEM

James H. Bowen, Williamsburg; David L. Baldwin, and Philip R. Couch, both of Roanoke, all of Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,147

Int. Cl.³ H04B 9/00

U.S. Cl. 455—606 14 Claims



1. A secure fiber optic data transmission system comprising:

an optical fiber means to provide two way optical communication between two spaced terminals;

each of said two terminals including

first means coupled to an adjacent end of said optical fiber means to receive optical energy modulated by data transmitted from the other of said two terminals;

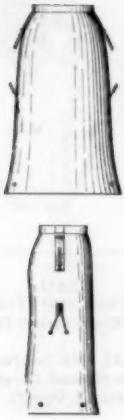
second means coupled to said adjacent end of said optical fiber means to transmit modulated optical energy to said other of said two terminals, said transmitted optical energy having a predetermined average optical power and data modulated thereon with a modulation index; and

third means coupled to said first and second means resonsive to said received optical energy to activate an alarm means and to deactivate said second means when said received optical energy has an amplitude outside of a given amplitude region,

said third means including

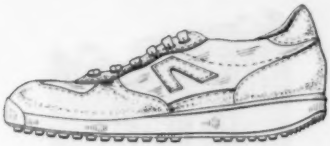
a threshold comparator coupled to said first and second means having two spaced threshold values to define said given amplitude region.

272,864
MULTIHEM-HEIGHT SKIRT
William A. Skewis, 171 W. Spruce, Sequim, Wash. 98382
Filed Nov. 29, 1982, Ser. No. 445,007
U.S. Cl. D2—223

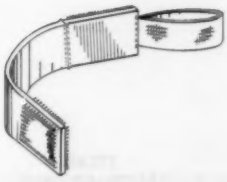


272,865
COMBINED SWEAT BAND AND EYE SHIELD
Paul H. Edelmann, 10461 SW. 132nd St., Miami, Fla. 33176
Continuation-in-part of Ser. No. 161,852, Jun. 23, 1980. This application Apr. 5, 1982, Ser. No. 365,870
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—241

272,866
SPORT SHOE
Gino Casetta, Pontelongo, Italy, assignor to Simod Patents N.A.N.V., Curacao, Netherlands Antilles
Filed Nov. 12, 1980, Ser. No. 206,166
Claims priority, application Italy, May 16, 1980, 619338/80[U]
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

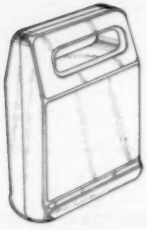


272,867
HIDDEN MOUNTABLE STRAP FOR BILLFOLD OR THE LIKE
Madison W. Gwaltney, P.O. Box 12D, and Goodrich W. Longserre, P.O. Box 8, both of Thompsons, Tex. 77481
Filed May 20, 1981, Ser. No. 265,505
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



272,868
LUGGAGE COVER
Max Jaffee, 1240 Homan Ave., Chicago, Ill. 60651
Filed Jun. 13, 1980, Ser. No. 159,178
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—41

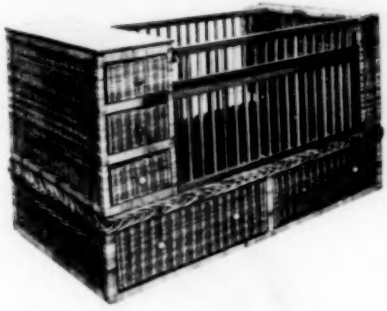
272,869
CARRYING CASE FOR CASH
Paul Davis, Kettering, England, assignor to Loach Manufacturing Co. Ltd., Lye, England
Filed Jan. 15, 1981, Ser. No. 225,346
Claims priority, application United Kingdom, Jul. 16, 1980, 995754
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73



272,870
LUGGAGE CASE
Richard Miles, Guilford, and Adrian D. Stokes, Colbrook, both of England, assignors to Samsonite Corporation, Denver, Colo.
Filed Nov. 23, 1981, Ser. No. 323,722
Claims priority, application United Kingdom, May 26, 1981, 811000672
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76

272,871
CHILD'S CLOTHES RACK
Gerald M. Rapaport, 5933 N. Lincoln Ave., Chicago, Ill. 60659
Filed Feb. 8, 1982, Ser. No. 346,524
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—5

272,872
COMBINED CRIB AND STORAGE UNIT
Norberto Moreno, 1404 Queen Summit Dr., West Covina, Calif. 91791
Filed May 21, 1981, Ser. No. 265,972
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—16



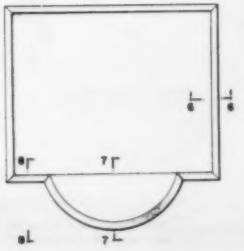
272,873
CHAIR
Hans C. Mengshoel, Bygdöy Alle 12, Oslo 2, and Oddvin Rykken, 5610 Øystese, Øystese, both of Norway
Filed Oct. 21, 1981, Ser. No. 313,247
Claims priority, application Norway, Apr. 29, 1981, 61.946
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

272,874
BRUSH HOLDER AND BRUSH FOR TOILET
Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,028
Claims priority, application Portugal, May 9, 1980, 15080
Term of patent 14 years
Int. Cl. D4—*01;* D6—*04*
U.S. Cl. D6—86

272,875
SOAP STAND
Brian M. Johnston, 114 W. 42 Ave., Vancouver, B.C., Canada
Continuation-in-part of Ser. No. 50,775, Jun. 12, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,508
Claims priority, application Canada, Apr. 23, 1979, 14-02-79-2
Term of patent 14 years
Int. Cl. D23—*02;* D6—*06*
U.S. Cl. D6—89

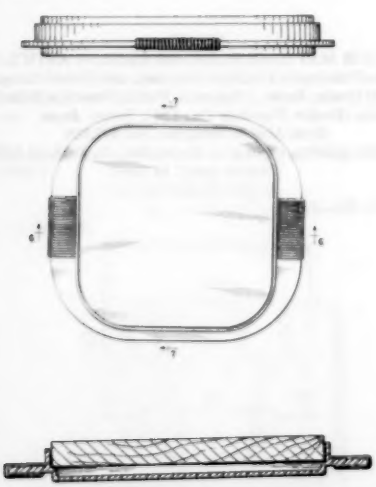
272,876
DRAPERY FOR FRAMING FURNITURE OR THE LIKE
William A. Hand, 3161 Sullivant Ave., Columbus, Ohio 43204
Filed Jan. 19, 1981, Ser. No. 226,424
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205

272,877
DOOR MAT BASE PLATE OR SIMILAR ARTICLE
Yosuke Yamamoto; Takehisa Kinoyama, and Kinichi Sasagawa, all of Osaka, Japan, assignors to Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.), Tokyo, Japan
Filed May 8, 1980, Ser. No. 147,718
Claims priority, application Japan, Dec. 11, 1979, 54-51723
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209

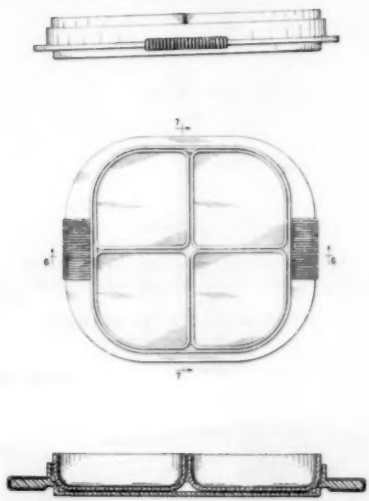


272,878
CUP
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Nov. 30, 1981, Ser. No. 325,920
Claims priority, application Switzerland, May 29, 1981, 71465
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6

272,879
SERVING PLATTER
Ambrogio Pozzi, Gallarate, Italy, assignor to F. LLI Guzzini S.p.A., Recanati, Italy
Filed Mar. 30, 1981, Ser. No. 248,889
Claims priority, application Italy, Sep. 29, 1980, 22951 B/80[U]
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—21



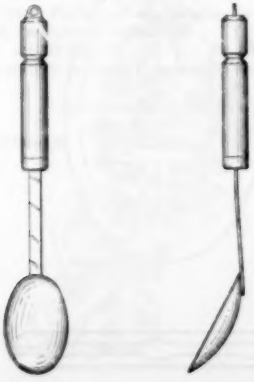
272,880
HORS-D'OEUVRE DISH
Ambrogio Pozzi, Gallarate, Italy, assignor to F. LLI Guzzini S.p.A., Recanati, Italy
Filed Mar. 30, 1981, Ser. No. 248,888
Claims priority, application Italy, Sep. 29, 1980, 22951 B/80[U]
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—21



272,881
FINGER-BOWL
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Nov. 30, 1981, Ser. No. 325,919
Claims priority, application Hague, May 29, 1981, 71465
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28

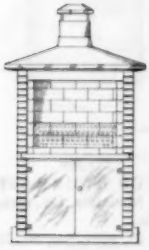
272,882
SERVER FOR A WINE BOTTLE OR THE LIKE
James H. Gardner, and Noel H. de Nevers, both of Salt Lake City, Utah, assignors to Aurora Design Associates, Inc., Salt Lake City, Utah
Filed Oct. 26, 1981, Ser. No. 314,952
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—70

272,883
SPOON
Fred S. Steiner, 154 Combs Ave., Woodmere, N.Y. 11598
Filed May 21, 1981, Ser. No. 265,831
Term of patent 14 years
Int. Cl. D07—*04, 03*
U.S. Cl. D7—104

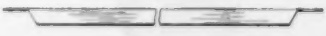


272,884
TEA KETTLE OR SIMILAR ARTICLE
Ben Seibel, New York, N.Y., assignor to S.F.C. Associates, Inc., New York, N.Y.
Filed Jan. 8, 1982, Ser. No. 337,810
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—321

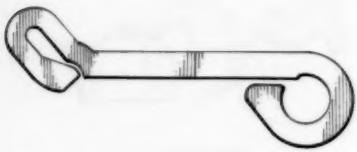
272,885
BARBECUE STOVE
Angelo Famiglietti, 26 Monroe Rd., Enfield, Conn. 06082
Filed Jan. 8, 1981, Ser. No. 223,363
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—333



272,886
INSULATION SUPPORT
J. L. Holcombe, Dallas, Tex., assignor to Emerson H. Mizell, Atlanta, Ga.
Division of Ser. No. 146,288, May 5, 1980. This application Aug. 20, 1982, Ser. No. 411,980
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380

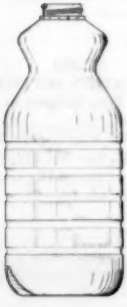


272,887
CLIP FOR GAME GOAL NETS
Denis Parton, 5 Enfield Grove, Leigh, County of Lancaster, England
Filed Oct. 30, 1981, Ser. No. 316,655
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



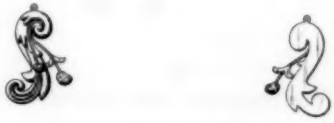
272,888
BOTTLE
Harold T. Wells, Medinah, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Jul. 31, 1981, Ser. No. 289,081
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352

272,889
BOTTLE OR SIMILAR ARTICLE
Benn C. Walton, Stone Mountain, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.
Filed Jul. 27, 1981, Ser. No. 287,184
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



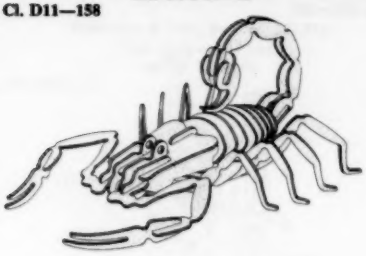
272,890
BUTTON
Kathleen A. Stratton, 9640 Wells Pkwy., Norfolk, Va. 23503
Filed Jan. 7, 1982, Ser. No. 337,834
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—55

272,891
JEWELRY PENDANT OR THE LIKE
Marilyn M. Bruce, 1206 Dover Dr., Newport Beach, Calif. 92660
Filed Sep. 14, 1981, Ser. No. 302,056
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—78



272,892
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 24, 1981, Ser. No. 324,560
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—125

272,893
SCORPION FIGURE
Tatsuya Kodaka, 25-6, Wakamiya 1-chome, Nakano-ku, Tokyo, Japan
Filed Nov. 12, 1981, Ser. No. 320,726
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158



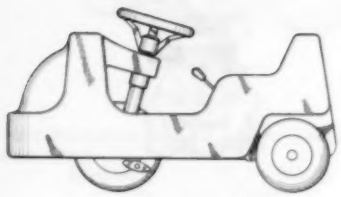
272,894
TARANTULA FIGURE
Tatsuya Kodaka, 25-6, Wakamiya 1-chome, Nakanu-ku, Tokyo, Japan
Filed Nov. 12, 1981, Ser. No. 320,727
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

272,895
TABLE ORNAMENT
Jean W. Heap, Pwllheli, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Apr. 28, 1982, Ser. No. 372,768
Claims priority, application United Kingdom, Mar. 13, 1982, 1005603
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

272,896
NOVELTY PIG FIGURE
Dana P. H. Kobashigawa, 475 Atkinson Dr., #1707, Honolulu, Hi. 96814
Filed May 20, 1982, Ser. No. 380,296
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

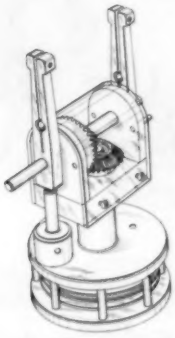
272,897
VEHICLE WHEEL COVER
Leif H. Chapman, Sylvan Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 12, 1981, Ser. No. 320,175
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

272,898
TOY CAR WITH PEDAL DRIVE
Heinz Kuchenbecker, Parkstr. 17; Hans J. L. Kuchenbecker, Parkstr. 15, and Rolf Kuchenbecker, Parkstr. 17, all of, D-5657 Haan 2, Fed. Rep. of Germany
Filed Jul. 29, 1980, Ser. No. 173,663
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—108



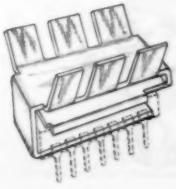
272,899
TIRE FOR A VEHICLE WHEEL
Hiroshi Tomoda, Ashiya, Japan, assignor to Dunlop Limited, London, England
Filed Jan. 14, 1981, Ser. No. 224,898
Claims priority, application Japan, Jul. 18, 1980, 55-29250
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—141

272,900
WIND VANE STEERING CONTROL FOR BOATS
Charles J. Obst, West Barrington, R.I., assignor to Joseph J. Vastano, Warwick, R.I., a part interest
Filed Dec. 28, 1981, Ser. No. 335,289
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—317

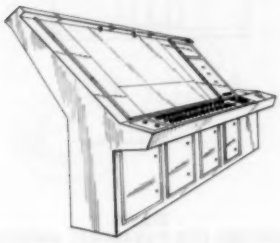


272,901
MODEL HOBBY GLOWPLUG POWER SOURCE WITH NEGATIVE TERMINAL HEADLOCK
Robert E. McDaniel, 2303 Victoria Ave., Bellevue, Nebr. 68005
Filed Mar. 9, 1981, Ser. No. 241,764
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—8

272,902
SELF-FASTENED HEAT SINK
Philip A. Johnson, Kingston, and Alfred F. McCarthy, Belmount, both of N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.
Filed Dec. 9, 1981, Ser. No. 328,947
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23

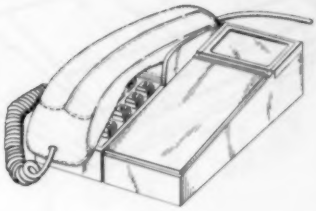


272,903
MACHINE CONTROL CONSOLE
Ludwig Friedrich, Dresden; Hans Johne, Radebeul; Karl-Heinz Förster, Dresden; Alfred Schott, Radebeul; Peter Reinhardt, Leipzig; Dieter Simon, Leipzig, and Arno Stockmann, Leipzig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz", Leipzig, German Democratic Rep.
Filed Jan. 2, 1981, Ser. No. 222,511
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40

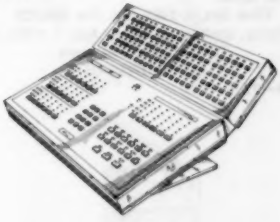


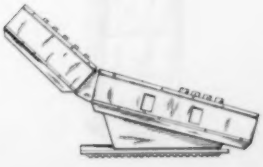
272,904
EARPHONE
Takeyoshi Kawano, Kunitachi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 17, 1981, Ser. No. 293,609
Claims priority, application Japan, Feb. 17, 1981, 56-6077
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—30

272,905
TELEPHONE INSTRUMENT
Knut H. Blomberg, Lokattsvagen 39, S 161 37 Bromma, Sweden
Division of Ser. No. 900,278, Apr. 26, 1978, Pat. No. Des. 259,260. This application Mar. 2, 1981, Ser. No. 239,506
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

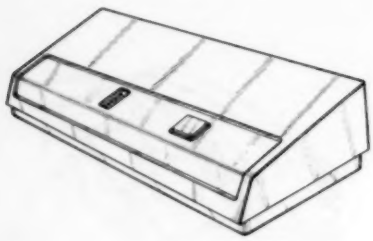


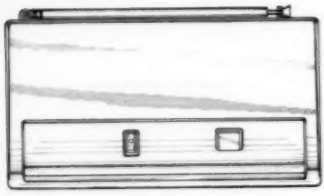
272,906
TELEPHONE CONSOLE
Bert D. Heinzelman, North Bergen, N.J.; Malcolm J. Brookes, and Douglas M. Spranger, both of New York, N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 21, 1981, Ser. No. 294,938
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



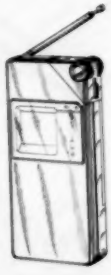


272,907
TELEPHONE BASE STATION
John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed May 1, 1981, Ser. No. 259,619
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

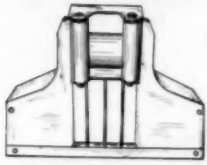




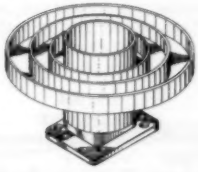
272,908
TELEVISION RECEIVER
Toshiyuki Matsuo, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 6, 1981, Ser. No. 309,025
Claims priority, application Japan, Apr. 7, 1981, 56-14639
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—77



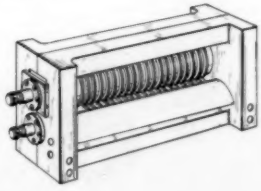
272,909
FAIRLEAD MOUNTING FOR A SKIDDER VEHICLE
Stanley Witczak, St. Thomas, Canada, assignor to Clark Equipment Company, Buchanan, Mich.
Filed Mar. 6, 1981, Ser. No. 241,177
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28



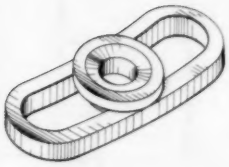
272,910
FEEDHORN FOR PARABOLIC ANTENNAE
Robert B. Taggart, Portola Valley, and Howard H. Taylor, San Andreas, both of Calif., assignors to Chaparral Communications, Inc., San Jose, Calif.
Filed Jun. 8, 1981, Ser. No. 271,815
U.S. Cl. D14—90



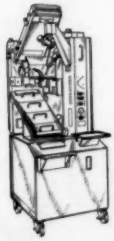
272,911
TAPE SLITTER
James C. Bolton, Ojai, Calif., assignor to Industrial Tools, Inc., Ojai, Calif.
Filed Nov. 20, 1981, Ser. No. 323,195
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127



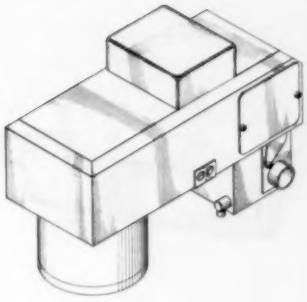
272,912
PROPELLER COUNTERWEIGHT BEARING ASSEMBLY
Kerry G. Dawes, Palo Cedro, Calif., assignor to Dennis A. Praegitzer, Palo Cedro, Calif.
Filed Oct. 30, 1981, Ser. No. 316,452
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—143



272,913
COMBINED HANDLING, TESTING, AND SORTING MACHINE FOR INTEGRATED CIRCUITS
Claude M. Boissicat, Cupertino, Calif., assignor to Contrel, Sunnyvale, Calif.
Filed Jun. 16, 1980, Ser. No. 159,673
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147

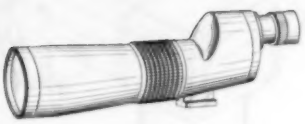


272,914
WIDE FIELD ILLUMINATOR
Ronald E. Sheets, Santa Ana, Calif., assignor to Tamarack Scientific Co., Inc., Anaheim, Calif.
Filed Oct. 13, 1981, Ser. No. 310,443
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32

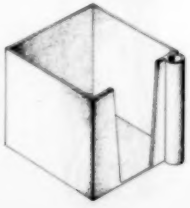


272,915
OPTICAL COUPLER PHOTOGRAPHIC ACCESSORY
Richard E. Feinbloom, New York; Richard Lepczynski, Brooklyn, and Wladyslaw Oleksy, New York, all of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.
Filed Nov. 5, 1981, Ser. No. 318,392
Term of patent 14 years
Int. Cl. D16—*05, 05*
U.S. Cl. D16—130

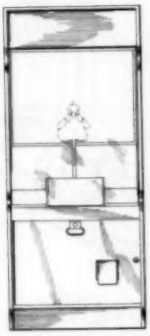
272,916
MONOCULAR
Masakazu Tomatsuri, Naka, and Chiyoji Takahashi, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 16, 1981, Ser. No. 254,609
Claims priority, application Japan, Oct. 29, 1980, 55-45216
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—132



272,917
COMBINED PAPER AND PENCIL CADDY
Joseph M. Micucci, Longmeadow, Mass., assignor to Olympic Sales Club, Inc., Enfield, Conn.
Filed Jul. 23, 1981, Ser. No. 285,994
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



272,918
VENDING MACHINE
Robert L. Glaser, Deerfield, Ill., assignor to L. M. Becker & Co., Inc., Appleton, Wis.
Filed Jun. 22, 1981, Ser. No. 275,757
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—1

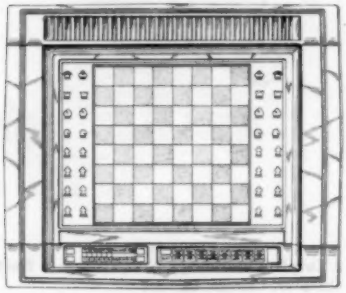


272,919

ELECTRONIC GAME BOARD

Jeffrey M. Chambers, Wilbraham, Mass., and Joseph Kata, Meriden, Conn., assignors to Milton Bradley International, Inc., Springfield, Mass.

Filed Feb. 1, 1982, Ser. No. 344,598
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24

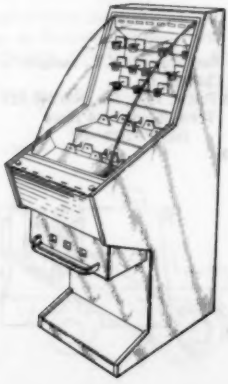


272,920

GAMING MACHINE

Michael Wichinsky, and Leroy Gutkneht, both of 2607 S. Highland, Las Vegas, Nev. 89109

Filed Nov. 18, 1980, Ser. No. 208,048
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—37

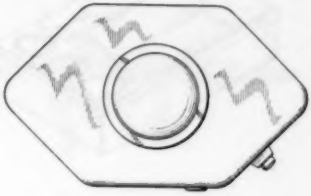


272,921

CONTROL FOR A VIDEO GAME OR THE LIKE

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Feb. 4, 1982, Ser. No. 345,934
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—48



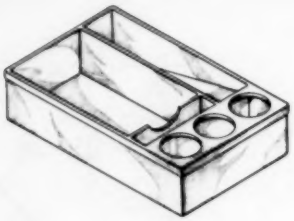
272,922

CHESS SET

Peter R. Rewald, 45575 Spring La. Bldg. #4 Apt. 207, Utica, Mich. 48087

Filed Aug. 12, 1980, Ser. No. 177,520
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52

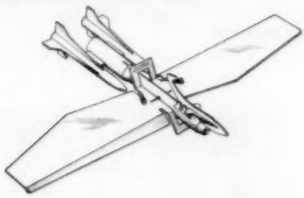
272,923
BINGO EQUIPMENT CONTAINER
Ronald B. Quinn; Mark Hudson, and Sharon Belson, all of 5450 Ethel Ave., Van Nuys, Calif. 91401
Filed Sep. 18, 1981, Ser. No. 303,364
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—55



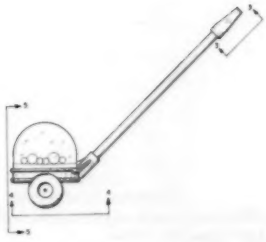
272,924
TOY PERISCOPE
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,743
U.S. Cl. D21—59

272,925
SIMULATIVE TOY VEHICLE
Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills; Ashley G. Howden; Mark S. Knighton, both of Los Angeles, and L. C. James Kingsbury, Fountain Valley, all of Calif., assignors to California R&D, Culver City, Calif.
Filed Feb. 12, 1982, Ser. No. 348,302
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74

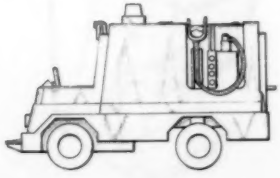
272,926
FLYABLE TOY ROTOR FOR KITE
Kenneth F. Guinn, 7513 Briley Dr., Forth Worth, Tex. 76118
Filed Dec. 10, 1981, Ser. No. 329,316
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—91



272,927
PUSH TOY
Martin J. Dropik, Cheektowaga, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 12, 1981, Ser. No. 320,705
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—92



272,928
TOY TRUCK
Robert C. Fisher, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,627
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—133

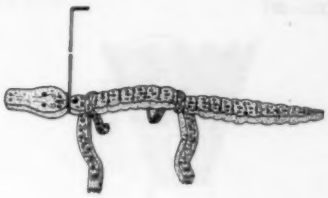


272,929
TOY TRUCK
Steven E. Hilko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,183
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—139

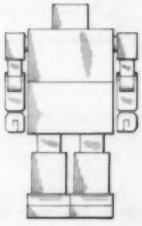
272,930
TOY CLOCK
Kenneth J. Anderson, Barrington Hills, Ill., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Mar. 19, 1981, Ser. No. 245,616
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—144

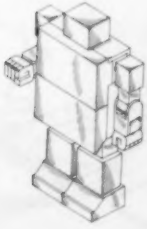
272,931
TOY WORM OR SIMILAR ARTICLE
William Burgi, 42 Male Rd., Clifton Park, N.Y. 12065, and Thomas DePartout, 2273 Connell Ter., Baldwinsville, N.Y. 13027
Filed Nov. 30, 1981, Ser. No. 325,863
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

272,932
TOY ALLIGATOR
John J. Sassak, 36855 Schoolcraft, Livonia, Mich. 48150
Filed Sep. 21, 1981, Ser. No. 304,225
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—157



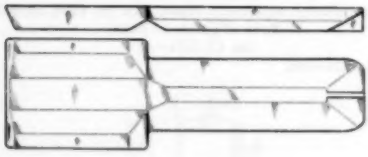
272,933
TOY ROBOT
Katsuji Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai, Tokyo, Japan
Filed Jun. 9, 1981, Ser. No. 272,073
Claims priority, application Japan, Dec. 29, 1980, 55/55337
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166



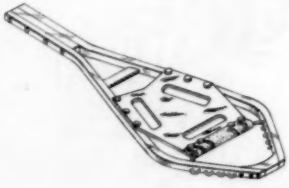


272,934
SHUTTLECOCK
Frank W. Popplewell, Saffron Walden, England, assignor to Dunlop Limited, London, England
Filed Nov. 16, 1979, Ser. No. 95,075
Claims priority, application United Kingdom, May 18, 1979, 989953
The portion of the term of this patent subsequent to Sep. 16, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—207

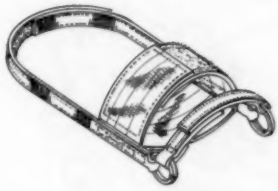
272,935
MARINE RESCUE AND RECREATIONAL BOARD
Charles D. Corey, 5 Jones La., Huntington, N.Y. 11743, and Francesco A. Pia, 3 Boulder Brae La., Larchmont, N.Y. 10538
Filed Oct. 9, 1981, Ser. No. 309,995
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



272,936
SNOWSHOE
Barney J. Klecker, 1144 S. Landmark Trail, Hopkins, Minn. 55343
Filed Dec. 28, 1981, Ser. No. 334,743
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



272,937
BINDING FOR A SNOWSHOE
Barney J. Klecker, 1144 S. Landmark Trail, Hopkins, Minn. 55343
Filed Dec. 28, 1981, Ser. No. 334,744
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230

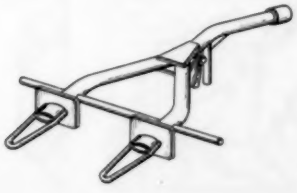


272,938
PISTOL GRIP PART
Herman W. Mueschke, Jr., 1003 Columbia St., Houston, Tex. 77008
Filed Mar. 1, 1982, Ser. No. 353,564
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

272,939
FISH NET HANDLE
Paul J. Readly, 316 Webster St., Ranshaw, Pa. 17866
Filed Sep. 21, 1981, Ser. No. 304,330
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

272,940
HIGH PRESSURE COVER
Tord G. I. Johansson, Heimdalsgatan 35, S-261 62 Glumslöv, Sweden
Filed Aug. 3, 1981, Ser. No. 289,149
Claims priority, application Sweden, Feb. 2, 1981, 1981-222
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—01

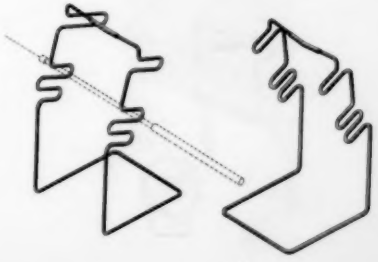
272,941
DUAL LIQUID ICE PROBE
Daniel E. Burns, 1805 Onda, Camarillo, Calif. 93010
Filed Aug. 17, 1981, Ser. No. 293,530
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1



272,942
SANITARY FITTING FOR A BIDET
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, Assignor to American Standard, Inc., New York, N.Y.
Division of Ser. No. 92,874, Nov. 9, 1979. This application May 14, 1982, Ser. No. 378,365
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 79/3
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23

272,943
ELECTRODE FOR BIOMEDICAL SIGNALS
Robert D. Stone, 23641 Cremona St., Laguna Hills, Calif. 92653, and Kenneth L. Dufour, 440 Desola Ter., Corona Del Mar, Calif. 92625
Filed Jun. 22, 1981, Ser. No. 275,808
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29

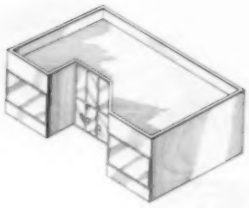
272,944
BACTERIOLOGICAL LOOP HOLDER
Vincent D. Coughlin, 108 High St., P.O. Box 428, Hackettstown, N.J. 07840
Filed Nov. 2, 1981, Ser. No. 317,065
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31



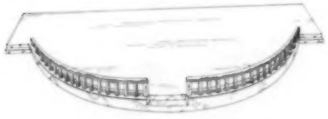
272,945
DEVICE FOR THE STIMULATION OF VAGINAL MUSCLES
Peter Suhel; Bozo Kralj, both of Ljubljana; Danijel Knez, Celje, and Janez Povse, Recica ob Paki, all of Yugoslavia, assignors to Gorenje Tgo N.Sol.O, Velenje, Velenje, Yugoslavia
Filed Mar. 23, 1981, Ser. No. 246,188
Claims priority, application Yugoslavia, Sep. 29, 1980, 361/80
Term of patent 14 years
Int. Cl. D28—*03, 01*
U.S. Cl. D24—36

272,946
EAR PROTECTOR
Thomas A. Scanlon, Barrington, R.I., assignor to Tasco Corp., East Providence, R.I.
Filed Aug. 24, 1981, Ser. No. 295,911
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—67

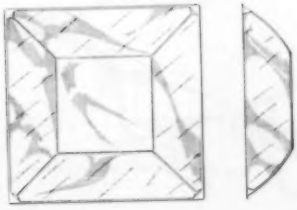
272,947
BUILDING
Rex W. Beasley, III, 32 Springwood, Irvine, Calif. 92714
Filed Apr. 8, 1981, Ser. No. 252,176
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—1



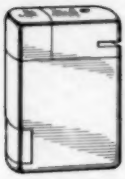
272,948
COMMUNION RAIL
LaVera R. Bull, 3804 - 6th St., East Moline, Ill. 61244
Continuation-in-part of Ser. No. 113,712, Jan. 21, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,393
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38



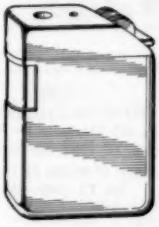
272,949
ONE PIECE DOME CEILING
John E. Beaty, Sr., 107 Miami Gardens Rd., Hollywood, Fla. 33023
Filed Dec. 21, 1981, Ser. No. 332,448
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—92



272,950
COMBINED LIGHTER AND CIGAR/CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,573
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—38

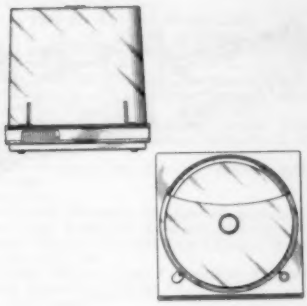


272,951
COMBINED LIGHTER AND CIGAR/CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,380
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—38

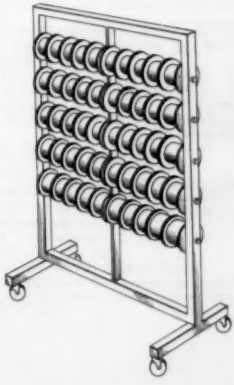


272,952
COSMETIC CONTAINER
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Feb. 11, 1982, Ser. No. 348,100
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—89

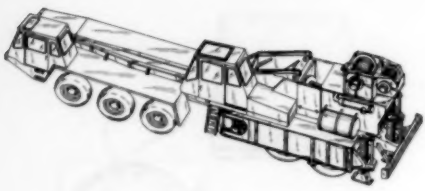
272,953
DISHWASHER
Frank Taylor, 2000 W. Ocean Front, Newport Beach, Calif. 92663
Filed Oct. 7, 1981, Ser. No. 309,178
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—2



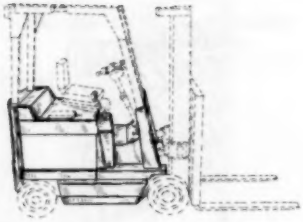
272,954
MOBILE RACK FOR HOLDING WIRE
James Sparks, Fitchburg, Mass., assignor to Electronic Assemblies, Inc., N. Billerica, Mass.
Filed Aug. 14, 1981, Ser. No. 292,876
Term of patent 14 years
Int. Cl. D06—*99*
U.S. Cl. D34—21



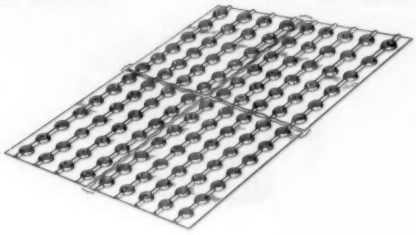
272,955
MOBILE CRANE
David C. Dowrick, Cedar Rapids, and John M. Lanning, Solon, both of Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.
Filed Apr. 20, 1981, Ser. No. 255,755
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—34

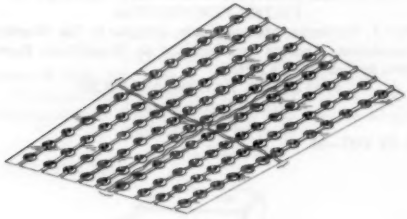


272,956
LIFT TRUCK BODY
Robert L. Kirby; Warner K. Brown, both of Battle Creek, Mich., and Dennis M. Lanci, Renton, Wash., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Jun. 22, 1981, Ser. No. 276,438
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—37



272,957
FOUNDATION WALL OUTER MOISTURE BAR SHEET OR BASEMENT INNER WALL OR FLOOR HUMIDITY CONTROLLING LINING SHEET OR THE LIKE
Jon Bergsland, Charlotte Andersens vei 11 B, Oslo 3, Norway
Filed Sep. 3, 1981, Ser. No. 299,018
Claims priority, application Norway, Mar. 11, 1981, 61,801
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D92—31





272,958
FONT OR THE LIKE
C. Esteban Valencia, 495 Mariposa Dr., Ventura, Calif. 93001
Filed Sep. 14, 1981, Ser. No. 302,292
Term of patent 14 years
Int. Cl. D99—*25*
U.S. Cl. D99—25

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, 4,435,122, Cl. 415-121.00B.

A. B. Dick Company: *See*—
McHenry, Max D., 4,434,715, Cl. 101-76.000.

A. E. Staley Manufacturing Company: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.

A.I.M. Services: *See*—
Frank, John, 4,435,795, Cl. 368-16.000.

A.R.M.I.N.E.S.: *See*—
Trottier, Jean-Pierre; and Jeandin, Michel, 4,435,360, Cl. 419-49.000.

A/S Haustrup Plastic: *See*—
Ingemann, Ole, 4,434,907, Cl. 220-276.000.

A. W. Plume Limited: *See*—
Plume, Alan W., 4,435,819, Cl. 373-119.000.

AB Tesi: *See*—
Silander, Torsten, 4,434,797, Cl. 128-343.000.

Abadi, Khodabandeh. Descaling composition. 4,435,303, Cl. 252-80.000.

Abbott Laboratories: *See*—
Lee, Cheuk M.; and Parks, James A., 4,435,422, Cl. 424-285.000.

Abe, Kenichi: *See*—
Ishimaru, Kimio; and Abe, Kenichi, 4,435,629, Cl. 219-10.55A.

Abe, Mitsuo: *See*—
Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, 4,434,544, Cl. 29-578.000.

Abe, Shinya: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Abelard Management Services Limited: *See*—
Wooler, Alan M., 4,435,526, Cl. 521-107.000.

Abernathy, Frederick H., to President and Fellows of Harvard College. Pattern recognition and orientation system. 4,435,837, Cl. 382-41.000.

Abidin, Anwar: *See*—
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Abrams, Gerald. Rolling pin with gauge wheels. 4,435,145, Cl. 425-458.000.

Abramson, Allen P.; and Stiles, Theodore R., to Challenger Circle F, Inc. Terminal connector with safety device. 4,435,032, Cl. 339-36.000.

Abramson, Edward A.; and Townsend, Peter K., to Du Pont de Nemours, E. I., and Company. Fiber optic connector with deformable mounting post. 4,435,037, Cl. 350-96.200.

AccuRay Corporation: *See*—
Williams, Paul, 4,434,649, Cl. 73-37.700.

Ace Polymers, Inc.: *See*—
Roellchen, Thomas A., 4,435,463, Cl. 428-158.000.

Acorn Engineering Company: *See*—
Morris, Earl L.; and Hafner, V. Walter, 4,434,516, Cl. 4-252.00R.

Adachi, Hiroyuki; and Hosono, Nagao, to Canon Kabushiki Kaisha. Image recording apparatus with leakage preventing microwave fixing device. 4,435,072, Cl. 355-3.0FU.

Adams, Derek S., to Lucas Industries plc. Battery charging system. 4,435,675, Cl. 320-22.000.

Adell, Robert, to U.S. Product Development Company. Decorative moldings. 4,434,598, Cl. 52-716.000.

Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, to ASEA Aktiebolag. Integrated capacitive transducer. 4,434,665, Cl. 73-724.000.

Advanced Technology Laboratories: *See*—
McAusland, Robert R., 4,435,614, Cl. 174-117.0PC.

Aeroquip Corporation: *See*—
Boland, John D.; and Kresky, Fred C., 4,434,970, Cl. 254-108.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Sorbier, Pierre, 4,435,347, Cl. 264-118.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Payrhammer, Bernd; and Weinert, Volker, 4,435,075, Cl. 355-35.000.

Agreda, Victor H.; and Partin, Lee R., to Eastman Kodak Company. Reactive distillation process for the production of methyl acetate. 4,435,595, Cl. 560-234.000.

AHI Operations Limited: *See*—
Millar, Thomas D., 4,434,744, Cl. 119-14.020.

Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., to Nyby Uddeholm Powder Aktiebolag. Loose sintering of spherical ferritic-austenitic stainless steel powder and porous body. 4,435,483, Cl. 428-566.000.

Aida Engineering, Ltd.: *See*—
Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, 4,434,646, Cl. 72-451.000.

Air Products & Chemicals, Inc.: *See*—
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.

Aisen Seiki Kabushiki Kaisha: *See*—
Kobayashi, Hideyuki, 4,434,619, Cl. 60-547.100.

Ajioka, James S.; and Joe, Dick M., to Hughes Aircraft Company. Rod-excited waveguide slot antenna. 4,435,715, Cl. 343-771.000.

Akaku, Fumiyoshi: *See*—
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Akatsuka, Shin-ichiro, to Eisai Company, Limited. Elimination of rancid odor in fermented milk products. 4,435,431, Cl. 426-36.000.

Akimoto, Hiroshi: *See*—
Nishimura, Susumu; and Akimoto, Hiroshi, 4,435,570, Cl. 544-280.000.

Akiyoshi, Yuji: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Akkapeddi, Murali K.: *See*—
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.

Akkerman, Neil H.: *See*—
Vazquez, Gonzalo; and Akkerman, Neil H., 4,434,847, Cl. 166-117.500.

Aktiengesellschaft Adolf Saurer: *See*—
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.

Al-Khazraji, Yousif A. H.: *See*—
Hemp, John; and Al-Khazraji, Yousif A. H., 4,434,666, Cl. 73-861.120.

Alan Cobham Engineering Limited: *See*—
Coffin, Christopher J., 4,435,626, Cl. 200-81.90R.

Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Shaft seal with magnetically controlled gap between rotating ring and surrounding non-rotating ring. 4,434,987, Cl. 277-80.000.

Albert Handtmann GmbH & Co.: *See*—
Staudenrausch, Georg; and Weerth, Hans-Ernst, 4,434,527, Cl. 17-33.000.

Albini, Giovanni: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.

Albright, Jay D.: *See*—
McEvoy, Francis J.; and Albright, Jay D., 4,435,329, Cl. 260-455.00R.

Alexander, David C.: *See*—
Simons, Leslie H.; and Alexander, David C., 4,435,517, Cl. 502-74.000.

Alexander, Michael C.: *See*—
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.

Alfano, Robert R.: *See*—
Schiller, Norman H.; and Alfano, Robert R., 4,435,727, Cl. 358-139.000.

Alford, Arthur L., to International Environmental Manufacturing Co. Heat exchanger apparatus. 4,434,843, Cl. 165-150.000.

Allen-Bradley Company: *See*—
Callan, John E., 4,435,706, Cl. 340-825.080.

Allen, Joseph C., to Heavy Oil Process, Inc. Method and apparatus for recovering high viscosity oils. 4,434,849, Cl. 166-252.000.

Alley, Patrick H. Event detection and indication system. 4,435,700, Cl. 340-539.000.

Allied Corporation: *See*—
Holt, Harley R., 4,434,551, Cl. 29-861.000.
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.
Oxenrider, Bryce C.; and Long, David J., 4,435,294, Cl. 252-8.600.

Allis-Chalmers Corporation: *See*—
Nolt, James R., Jr., 4,435,448, Cl. 427-234.000.

Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L., 4,435,481, Cl. 428-550.000.

Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Photo-assisted CVD. 4,435,445, Cl. 427-54.100.

Almqvist, Christer; and Lindahl, Lars, to ReHeat AB. Method and a device for embossing heat exchanger plates. 4,434,643, Cl. 72-379.000.

Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., to General Electric Company. Automated ammunition mixer. 4,434,700, Cl. 89-34.000.

Aluminium de Grece: *See*—
Casdas, Spyridon, 4,435,255, Cl. 204-67.000.

Aluminum Company of America: *See*—
Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., 4,435,213, Cl. 75-249.000.

ALZA Corporation: *See*—
Leeper, Harold M., 4,435,180, Cl. 604-896.000.

Am Fab, Inc.: *See*—
Solomon, Robert A.; and Dellinger, John J., 4,434,722, Cl. 108-8.000.

Ambros, Rainer: *See*—
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.

Amchem Products, Inc.: *See*—
Dollman, David Y., 4,435,223, Cl. 134-3.000.

American Cyanamid Company: *See*—
Cesark, Frank F.; and Thomas, Daniel W., 4,435,002, Cl. 282-27.500.
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., 4,435,419, Cl. 424-274.000.
Loffelman, Frank F.; and Brady, Thomas E., 4,435,555, Cl. 526-261.000.
McEvoy, Francis J.; and Albright, Jay D., 4,435,329, Cl. 260-455.00R.
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,435,387, Cl. 424-180.000.

American Hoechst Corporation: *See*—
Walls, John E.; and Duyal, Tulay, 4,435,496, Cl. 430-285.000.

American Hospital Supply Corporation: *See*—
Hudspith, Sydney, 4,434,823, Cl. 141-329.000.
Redmond, Russell J.; and Hannula, Donald L., 4,435,174, Cl. 604-174.000.

American Optical Corporation: *See*—
Hennick, Robert P., 4,435,079, Cl. 356-123.000.

American Screen Printing Equipment Company: *See*—
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.

American Standard Inc.: *See*—
Mills, Larry E.; and Dove, Thomas D., 4,435,001, Cl. 282-11.50A.

Ames, Jack D.: *See*—
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.

AMF Incorporated: *See*—
Rose, John A.; and Dyer, Keith, 4,434,730, Cl. 112-121.120.

AMP Incorporated: *See*—
Berry, Donald A.; Fabian, David J.; and Lucius, John E., 4,435,035, Cl. 339-99.00R.
Soes, Lucas; and Ten Berge, Eduardus F. A., 4,435,038, Cl. 350-96.210.

Ampex Corporation: *See*—
Chow, Yiu T.; and Gilligan, Thomas J., 4,435,754, Cl. 364-200.000.
Ryan, Dennis M., 4,434,686, Cl. 81-3.00R.
Ryan, Dennis M., 4,434,954, Cl. 242-189.000.

AMSTED Industries Incorporated: *See*—
Mulcahy, Harry W.; and Kaufhold, Horst T., 4,434,720, Cl. 105-199.0CB.

Ancher, Jean-Francois R.: *See*—
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Andersson, Karl H. T.: *See*—
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., 4,435,483, Cl. 428-566.000.

Ando, Hideo; and Suzuki, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing an information memory disk. 4,435,343, Cl. 264-22.000.

Andrejasich, Raymond J.: *See*—
Perry, Ralph A.; and Andrejasich, Raymond J., 4,434,650, Cl. 73-61.10R.

Andros, John H.: *See*—
Tsoukalas, Skevos N.; and Andros, John H., 4,435,305, Cl. 252-158.000.

Andrus, Paul G.: *See*—
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., 4,435,828, Cl. 378-49.000.

Anne, Lenin: *See*—
Marston, Alan D.; and Anne, Lenin, 4,435,446, Cl. 427-93.000.

Annegarn, Marcellinus J. J. C.: *See*—
Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., 4,435,728, Cl. 358-140.000.

Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Hydrocortisone derivatives, the preparation and use thereof. 4,435,390, Cl. 424-243.000.

Anritsu Electric Company Limited: *See*—
Sasakawa, Tomio, 4,435,036, Cl. 350-96.200.

Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., to National Research Development Corporation. Tympanometric apparatus. 4,434,800, Cl. 128-665.000.

Antonazzi, Frank J., to Bendix Corporation, The. Pressure ratio measurement system. 4,434,664, Cl. 73-701.000.

Aoki, Hiroyuki: *See*—
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.

Aono, Masami, to Tokico Ltd. Deceleration detecting valve responsive to failure in front brake circuit. 4,435,020, Cl. 303-6.00C.

Aoyagi, Edward I., to Chevron Research Company. Fungicidal and algicidal 1-methyl-3,4-dihalo-5-substituted thio-, sulfoxyl-, or sulfonyl-pyrazoles. 4,435,416, Cl. 424-273.00P.

Aoyagi, Yoshiaki: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.

Apache Powder Company: *See*—
Ciaramitaro, David A.; and Moore, Jack M., 4,435,232, Cl. 149-2.000.

Arai, Isao: *See*—
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.

Arakawa, Shun, to Fuji Photo Film Co., Ltd. Process for producing photographic paper. 4,435,248, Cl. 162-12.000.

Araki, Kazuhiro: *See*—
Matsumoto, Akio; and Araki, Kazuhiro, 4,435,087, Cl. 368-76.000.

Arbed S. A.: *See*—
Junck, Guy, 4,435,643, Cl. 250-358.100.

Arihara, Takumi, to Ikeda Bussan Co., Ltd. Recliner-back tilting mechanism. 4,435,013, Cl. 297-364.000.

Arikawa, Tetsuro, to Nippon Air Brake Co., Ltd. Skid control system. 4,435,768, Cl. 364-426.000.

Arlt, Dieter, to Bayer Aktiengesellschaft. Preparation of caronaldehyde acid and derivatives thereof. 4,435,597, Cl. 562-506.000.

Armco Inc.: *See*—
Cordrey, Richard N., 4,434,971, Cl. 254-273.000.

Armour Food Company: *See*—
Theiler, Richard F., 4,435,433, Cl. 426-266.000.

Armstrong World Industries, Inc.: *See*—
Forry, John S.; and Garrick, John R., 4,435,353, Cl. 264-518.000.

Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, to Hitachi, Ltd. Speech synthesizer having speech time stretch and compression functions. 4,435,832, Cl. 381-34.000.

Asada, Eiji: *See*—
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,435,482, Cl. 428-553.000.

Asahi Glass Company Ltd.: *See*—
Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, 4,435,048, Cl. 350-357.000.

Asahi, Hiroji: *See*—
Kitagawa, Norihisa; and Asahi, Hiroji, 4,435,788, Cl. 365-185.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Takumi, 4,435,060, Cl. 354-173.100.

Asami, Hajime: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.

Aschenbruck, Emil: *See*—
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.

ASEA Aktiebolag: *See*—
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, 4,434,665, Cl. 73-724.000.
Stenkvist, Sven-Einar, 4,435,813, Cl. 373-72.000.

Ashland Oil, Inc.: *See*—
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Assirelli, Antonietta: *See*—
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare, 4,434,612, Cl. 57-331.000.

Astberg, Ake, to Svenska Rotor Maskiner Aktiebolag. Screw rotor machine and rotor profile therefor. 4,435,139, Cl. 418-201.000.

Astheimer, Robert W., to Barnes Engineering Company. Method and apparatus for monitoring the burning efficiency of a furnace. 4,435,149, Cl. 431-12.000.

Atari, Inc.: *See*—
Barnett, Ralph M., 4,435,746, Cl. 363-21.000.
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.

Atkinson, Alan W.; and Lancaster, Janet M., to T&N Materials Research Limited. Gasket manufacture. 4,435,235, Cl. 156-62.200.

Atkinson, Gordon E., to Vernay Laboratories, Inc. Bi-directional pressure relief valve. 4,434,810, Cl. 137-493.000.

Atkinson, Ronald E.: *See*—
Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., 4,435,317, Cl. 252-547.000.

Atwood, Robert G.: *See*—
Skinner, James R.; and Atwood, Robert G., 4,434,891, Cl. 206-444.000.

Audeh, Costandi A., to Mobil Oil Corporation. Re-refining lubricating oil in a bed of oil shale. 4,435,270, Cl. 208-11.00R.

August, Charles; and Myers, Harry J., to United States of America, Energy. Permanent magnet flowmeter having improved output terminal means. 4,434,667, Cl. 73-861.120.

Aujla, Sharanjit S.; and Lee, John D., to Northern Telecom Limited. Connectors with insulation-displacing terminals. 4,435,034, Cl. 339-98.000.

Ausonia Farmaceutici s.r.l.: *See*—
De Vincentiis, Leonardo, 4,435,591, Cl. 560-73.000.

Austin, Stephen R.: *See*—
Mosely, John F.; and Austin, Stephen R., 4,435,113, Cl. 414-347.000.
Automated Optic, Inc.: *See*—
Spriggs, Robert G., 4,434,581, Cl. 51-67.000.
AVA International Corporation: *See*—
Vazquez, Gonzalo; and Akkerman, Neil H., 4,434,847, Cl. 166-117.500.
Avco Corporation: *See*—
Bartle, Richard S., 4,435,645, Cl. 250-493.100.
Avera, William W.: *See*—
Nijhawan, Pramodh; and Avera, William W., 4,435,197, Cl. 55-341.00R.
Axelson, Inc.: *See*—
Vanderburg, Ralph W., 4,434,967, Cl. 251-328.000.
Axford, Theodore G.: *See*—
Sheldon, William W.; and Axford, Theodore G., 4,434,572, Cl. 43-6.500.
Aylward, David E., to Cities Service Co. Catalyst composition. 4,435,520, Cl. 502-107.000.
Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, to Diebold, Incorporated. Deposit information labeling mechanism for ATM envelope depositing equipment. 4,435,243, Cl. 156-361.000.
B. F. Goodrich Company, The: *See*—
Dinbergs, Kornelius, 4,435,524, Cl. 521-65.000.
Fisher, John M., 4,434,870, Cl. 182-48.000.
Baba, Yutaka: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Babcock & Wilcox Company, The: *See*—
Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 4,434,537, Cl. 24-380.000.
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Matsko, Theodore N., 4,435,291, Cl. 210-739.000.
Babineaux, Bernard J. Boxing device that fights back. 4,434,980, Cl. 272-78.000.
Bach, Hanswilhelm: *See*—
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.
Bachmann, William V. Internal combustion engine. 4,434,752, Cl. 123-50.00B.
Backman, Henrik A. Method for fixing the ends of concrete columns in concrete bases and device for carrying out said method. 4,434,600, Cl. 52-741.000.
Bacroix, Marcel A., to Service de Propriete Indust. Centre de Recherches de Pont a Mousson. Device for the automatic filling of bottles and installation containing same. 4,434,821, Cl. 141-44.000.
Badger Company, Inc., The: *See*—
Miserlis, Constantine D., 4,435,580, Cl. 549-248.000.
Miserlis, Constantine D., 4,435,581, Cl. 549-248.000.
Baehr, Donald O., to United States Gypsum Company. Process for rapid dewatering and drying of calcium sulfate hemihydrate. 4,435,183, Cl. 23-293.00R.
Bahary, William S.; and Griffin, Rowland A., to Duracell Inc. Gelling agent for alkaline cells. 4,435,488, Cl. 429-212.000.
Bahnson Company, The: *See*—
Nijhawan, Pramodh; and Avera, William W., 4,435,197, Cl. 55-341.00R.
Bailey, Alfred J., to Massey-Ferguson Services N.V. Mower-conditioner. 4,434,605, Cl. 56-16.400.
Bailey, John M., to Caterpillar Tractor Co. Method and apparatus for flattening corrugated heat exchanger plate. 4,434,637, Cl. 72-17.000.
Baillie, Alan G., to Burroughs Corporation. Manufacture of wafer-scale integrated circuits. 4,435,498, Cl. 430-318.000.
Baines, Kerry D.: *See*—
Berdat, Henry F.; and Baines, Kerry D., 4,435,055, Cl. 354-4.000.
Baker, Kenneth D.; and Scheider, Hans, to OMI International Corporation. Gold sulphite electroplating solutions and methods. 4,435,253, Cl. 204-43.00G.
Balcke-Duerr AG: *See*—
Fickelscher, Kurt G., 4,434,682, Cl. 74-805.000.
Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Pyrophoric foil and article, and pyrophoric technique. 4,435,481, Cl. 428-550.000.
Baldwin, David L.: *See*—
Bowen, James H.; Baldwin, David L.; and Couch, Philip R., 4,435,850, Cl. 455-606.000.
Ball Corporation: *See*—
Nguyen, Tuan A., 4,434,641, Cl. 72-354.000.
Ballato, Arthur: *See*—
Mariani, Elio; and Ballato, Arthur, 4,435,441, Cl. 427-10.000.
Balzers Aktiengesellschaft: *See*—
Winkler, Otto, 4,434,622, Cl. 62-6.000.
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, to Sanwa Kagaku Kenkyusho Co. Ltd. 2,5-Benzodiazocine derivatives and salts thereof, as well as pharmaceutical agent comprising as effective component at least one of the derivatives and salts. 4,435,392, Cl. 424-244.000.
Bankston, Ben F.: *See*—
Kurtz, George W.; and Bankston, Ben F., 4,434,659, Cl. 73-620.000.
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, to Gedeon Vegyeszeti Gyar Rt. Process for the extraction of solid material from solution by crystallization. 4,435,182, Cl. 23-295.00R.
Baon, Carlos P. Portable intrusion alarm. 4,435,701, Cl. 340-546.000.
Barakaev, Khristofor F.: *See*—
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.
Barbeau, Dennis E., to Teledyne Industries, Inc. Engine fuel system. 4,434,621, Cl. 60-734.000.
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., to Union Carbide Corporation. Multilayer ceramic capacitors. 4,435,738, Cl. 361-321.000.
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, to Novo Industri A/S. Detergent cellulase. 4,435,307, Cl. 252-174.120.
Barbin, William W.: *See*—
Koch, Russell W.; and Barbin, William W., 4,434,832, Cl. 152-370.000.
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased (by Haglid, Britt I., executrix), to Du Pont de Nemours, E. I., and Company. Thiol methylation process-reaction, recycle and regeneration of methyl bromide. 4,435,568, Cl. 544-182.000.
Barch, Herbert W.: *See*—
Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, 4,434,521, Cl. 15-230.110.
Barkemeyer, Wolfgang K. W., to Jastram-Werke GmbH & Co. KG. Rudder for watercraft. 4,434,738, Cl. 114-162.000.
Barlow, Gordon A., to Gordon Barlow Design. Tamper evident packaging. 4,434,893, Cl. 206-522.000.
Barnard, Robert L. Collapsible yard pan. 4,434,829, Cl. 150-49.000.
Barnes Engineering Company: *See*—
Astheimer, Robert W., 4,435,149, Cl. 431-12.000.
Barnes, John F.: *See*—
Melka, James P., Jr.; and Barnes, John F., 4,435,258, Cl. 204-109.000.
Barnett, Ralph M., to Atari, Inc. Inductive reactive voltage regulator. 4,435,746, Cl. 363-21.000.
Barry Wright Corporation: *See*—
Peterson, Robert R., 4,435,097, Cl. 384-221.000.
Barta nee Szalai, Gizella: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Barth, Not-Duri; and Gaupp, Osvin, to BBC Brown, Boveri & Company, Limited. High tension circuit breaker. 4,435,627, Cl. 200-148.00R.
Barth, Utz W.: *See*—
Ilgner, Herwig; and Barth, Utz W., 4,435,849, Cl. 455-601.000.
Bartholic, David B.; and Flanders, Robert L., to Engelhard Corporation. Process for upgrading crude oil and residual fractions thereof by vaporizing the charge in a falling curtain of contact particles. 4,435,272, Cl. 208-127.000.
Bartle, Richard S., to Avco Corporation. Infrared radiation signature generation system. 4,435,645, Cl. 250-493.100.
Bascou, Jacques, to Regie Nationale des Usines Renault. Locking device for pivoting window. 4,435,007, Cl. 292-268.000.
BASF Aktiengesellschaft: *See*—
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.
BASF Wyandotte Corporation: *See*—
Reichel, Curtis J., 4,435,592, Cl. 560-91.000.
Basi, Jagtar S.; and Mendel, Eric, to International Business Machines Corporation. Method for polishing titanium carbide. 4,435,247, Cl. 156-636.000.
Basrai, Habil S., to Ford Motor Company. Tractor and implement coupled thereto with hydraulic lift system including phasing valve. 4,434,857, Cl. 172-328.000.
Battelle Development Corporation: *See*—
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., 4,435,828, Cl. 378-49.000.
Batzold, John S.; and Savas, Judith C., to Exxon Research and Engineering Co. Gas percolation barrier for gas fed electrode. 4,435,267, Cl. 204-284.000.
Bauer, Wilfried; and Pless, Janos, to Sandoz Ltd. N-Acyl-polypeptides and processes for the production thereof. 4,435,385, Cl. 424-177.000.
Baum, Richard I.; and Sakalay, Frederick E., to International Business Machines Corporation. Hardware monitor for obtaining processor software/hardware interrelationships. 4,435,759, Cl. 364-200.000.
Baxter Travenol Laboratories, Inc.: *See*—
Bellamy, David; and Smith, Dale A., 4,434,822, Cl. 141-98.000.
D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., 4,434,904, Cl. 215-232.000.
Russell, Pat, 4,434,963, Cl. 251-7.000.
Bayer Aktiengesellschaft: *See*—
Arlt, Dieter, 4,435,597, Cl. 562-506.000.
Bier, Peter; and Binsack, Rudolf, 4,435,546, Cl. 525-418.000.
Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, 4,435,465, Cl. 428-195.000.
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,435,336, Cl. 260-508.000.
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, 4,435,208, Cl. 71-105.000.

Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, 4,434,530, Cl. 19-0.460.
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.
Reubke, Karl-Julius, 4,435,324, Cl. 260-378.000.
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.
Schreckesberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.
Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, 4,435,334, Cl. 260-501.120.
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Bayerische Motoren Werke A.G.: *See*—
Brenner, Horst; and Hinsberg, Rene, 4,434,868, Cl. 180-226.000.

Bazell, Seymour: *See*—
Goldberg, Edward M.; and Bazell, Seymour, 4,435,171, Cl. 604-49.000.

BBC Brown, Boveri & Company, Limited: *See*—
Barth, Not-Duri; and Gaupp, Osvin, 4,435,627, Cl. 200-148.00R.
Buhler, Karl, 4,435,814, Cl. 373-76.000.

Beach, Lynne B.: *See*—
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., 4,434,946, Cl. 242-18.00G.

Beach-Thomas, Anthony W., to Hughes, John Rhys. Trolley for use in transporting a boat. 4,434,992, Cl. 280-47.13B.

Beair, Charles E.: *See*—
Ou, Sam A.; and Beair, Charles E., 4,434,905, Cl. 220-89.00A.

Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., to Babcock & Wilcox Company, The. Integral latching mechanism for module front plate. 4,434,537, Cl. 24-380.000.

Bearint, Beryl I. Puzzle-game utilizing movable discs to attain specified arrangement. 4,434,982, Cl. 273-153.00S.

Bechthold, Horst, to Buckau-Walther AG. Method of manufacturing ammonium sulfate granules. 4,435,341, Cl. 264-7.000.

Bechtolsheim, Andreas, to Sun Microsystems, Inc. Raster memory manipulation apparatus. 4,435,792, Cl. 365-230.000.

Beck, Hubert W.: *See*—
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., to Continental Group, Inc., The. Reciprocating clamp apparatus for thermoforming plastic containers. 4,435,244, Cl. 156-379.800.

Becker, Norbert; and Hildebrandt, Norbert. Connection for furniture frame parts, particularly office furniture. 4,435,103, Cl. 403-292.000.

Becker, Philip D., to Buell Industries, Inc. Fastener assembly. 4,435,112, Cl. 411-368.000.

Becton, Dickinson and Company: *See*—
Hill, Charles E., 4,435,458, Cl. 428-91.000.

Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., to General Electric Company. Programmable signal amplitude control circuits. 4,435,679, Cl. 323-350.000.

Beecham Group Limited: *See*—
Greenway, Michael J., 4,435,414, Cl. 424-271.000.
Stirling, Irene; and Clarke, Brian P., 4,435,565, Cl. 542-416.000.

Beecham Group p.l.c.: *See*—
Rogers, Norman H.; and Crimmin, Michael J., 4,435,583, Cl. 549-414.000.

Behrend, Volkmar; and Roder, Eckhard, to O & K Orenstein & Koppel Aktiengesellschaft. Method of controlling horizontal motion of a load application point on an articulated crane. 4,435,118, Cl. 414-744.00R.

Beisler, Alfons, to Beisler Gesellschaft mit beschrankter Haftung. Arrangement for sewing separate successive seams along different directions in a fabric material. 4,434,731, Cl. 112-121.140.

Beisler Gesellschaft mit beschrankter Haftung: *See*—
Beisler, Alfons, 4,434,731, Cl. 112-121.140.

Belanger, Patrice C.; Williams, Haydn W. R.; and Rokach, Joshua, to Merck & Co., Inc. Resolution of substituted dibenzo[b,f]thiepin-3-carboxylic acid-5-oxides with ephedrine. 4,435,579, Cl. 549-12.000.

Belcher, Samuel L.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

Bell, Alexander G.: *See*—
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.

Bell, Anthony J.; and Beyersdorff, Leland E., to Goodyear Tire & Rubber Company, The. Emulsion polymerization process using monobasic alkali phosphate. 4,435,554, Cl. 526-229.000.

Bell, Curtis H.: *See*—
Olsen, Roy W.; and Bell, Curtis H., 4,435,352, Cl. 264-504.000.

Bell Helmets Inc.: *See*—
Sundahl, James G.; and Broersma, Lester V., 4,434,514, Cl. 2-425.000.

Bell Industries, Inc.: *See*—
Kaye, Peter D., 4,434,683, Cl. 76-37.000.
Nixon, Keith L., 4,434,684, Cl. 76-37.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cohen, Leonard G.; and Mammel, Wanda L., 4,435,040, Cl. 350-96.330.
Rubin, Steven M., 4,435,836, Cl. 382-27.000.
Tsang, Won-Tien; and van der Ziel, Jan P., 4,435,809, Cl. 372-49.000.

Bellamy, David; and Smith, Dale A., to Baxter Travenol Laboratories, Inc. System for the sterile mixing of materials. 4,434,822, Cl. 141-98.000.

Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., to Texas Instruments Incorporated. Multiprogrammable input/output circuitry. 4,435,763, Cl. 364-200.000.

Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., to Plough, Inc. Tamper-resistant recloseable package. 4,434,896, Cl. 206-621.000.

Beloit Corporation: *See*—
Karr, Gerald W., 4,434,949, Cl. 242-66.000.

Belz, Herman M.; and Stieber, Harry C., to Union Carbide Corporation. Method and article for protecting tapered threaded electrode joints by use of an alignment mechanism. 4,435,816, Cl. 373-91.000.

Bendell, Sidney L.; and Levine, Peter A., to RCA Corporation. Low noise CCD output. 4,435,730, Cl. 358-213.000.

Bendix Corporation, The: *See*—
Antonazzi, Frank J., 4,434,664, Cl. 73-701.000.
Brush, Robert W., Sr.; and Piscitelli, R. Amelia, 4,434,552, Cl. 29-876.000.
Kyriakos, Constantinos S., 4,435,708, Cl. 343-12.00A.
Martin, Gordon W.; and Strohl, John, 4,435,268, Cl. 204-408.000.
Peterson, Arnold D., 4,435,659, Cl. 310-68.00R.

Benito, Calvin G. Bird environmental inspection trap. 4,434,574, Cl. 43-63.000.

Benn, Otto: *See*—
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Berdat, Henry F.; and Baines, Kerry D., to Gerber Scientific Instrument Company, The. Multiple frequency ranging apparatus for focus control. 4,435,055, Cl. 354-4.000.

Beres-Deak, Laszlo: *See*—
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.

Berger Industries, Inc.: *See*—
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,435,005, Cl. 285-31.000.

Berger, Konrad: *See*—
Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, 4,434,566, Cl. 38-8.000.

Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, to Berger Industries, Inc. Joint for conduit with single threaded end. 4,435,005, Cl. 285-31.000.

Bergh, Sven S.: *See*—
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., 4,435,483, Cl. 428-566.000.

Bergmann, Roland: *See*—
Diehl, Manfred; and Bergmann, Roland, 4,435,216, Cl. 106-97.000.

Bergstrom, Carl D. Sailboat race board game apparatus. 4,434,984, Cl. 273-246.000.

Bernhard Beumer Maschinenfabrik KG: *See*—
Beumer, Bernhard, 4,434,603, Cl. 53-557.000.

Bernstein, Seymour: *See*—
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,435,387, Cl. 424-180.000.

Berry, Buford E. Apertured display board and hook. 4,434,960, Cl. 248-220.400.

Berry, Donald A.; Fabian, David J.; and Lucius, John E., to AMP Incorporated. Mass terminatable single row connector assembly. 4,435,035, Cl. 339-99.00R.

Berry, Robert L.: *See*—
Shideler, Jay A.; and Berry, Robert L., 4,435,225, Cl. 148-1.500.

Berthold, Fritz; and Kubisiak, Helmut, to Laboratorium Prof. Dr. Rudolf Berthold. Assays, including immunoassays with FITC label activated by sodium hypochlorite. 4,435,509, Cl. 436-518.000.

Bertin, Patrice, to Valeo, Societe Anonyme. Power-assisted steering device for a vehicle. 4,434,706, Cl. 91-375.00A.

Bertolacini, Ralph J.; and Forsythe, William L., Jr., to Standard Oil Company, (Indiana). Catalytic cracking using a cracking catalyst in admixture with particles of platinum group metal or rhenium on a substrate regenerated to up to about 0.1% coke. 4,435,282, Cl. 208-113.000.

Bertram, Hans H.: *See*—
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Best, Lance E.: *See*—
Dunphy, Gerald F.; and Best, Lance E., 4,434,634, Cl. 70-89.000.

Beswick, David G. E., to Kenneth E. Beswick Limited. Method of manufacturing plug-in electrical fuses. 4,434,548, Cl. 29-623.000.

Bethlehem Steel Corporation: *See*—
Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,435,093, Cl. 374-129.000.

Beumer, Bernhard, to Bernhard Beumer Maschinenfabrik KG. Plant for producing palletless stacks of piece goods, particularly sacks around which is shrunk a sheet. 4,434,603, Cl. 53-557.000.

Bey, Philippe: *See*—
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.

Beyer, Horst; Lonne, Klaus; and Majewski, Klaus-Peter, to Goetze AG. Sealing gasket. 4,434,989, Cl. 277-235.00B.

Beyersdorff, Leland E.: *See*—
Bell, Anthony J.; and Beyersdorff, Leland E., 4,435,554, Cl. 526-229.000.

Bhalla, Ranbir S.: *See*—
Plagge, Vernon L.; and Bhalla, Ranbir S., 4,435,669, Cl. 313-634.000.

Bianchi, Giuseppe; and Sburlino, Roberto, to Industrie Zanussi S.p.A. Washing machine with electrochemical cell. 4,434,629, Cl. 68-13.00A.

Bianchi, Valerio: *See*—
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Bianco, Frank J.: *See*—
Jiminez, Oscar; and Bianco, Frank J., 4,434,801, Cl. 128-689.000.

Bier, Peter; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Polyesters compositions which crystallize rapidly. 4,435,546, Cl. 525-418.000.

Bing, David H.: *See*—
Pabst, Patrea L.; and Bing, David H., 4,435,318, Cl. 260-112.00B.

Binsack, Rudolf: *See*—
Bier, Peter; and Binsack, Rudolf, 4,435,546, Cl. 525-418.000.

Biotechnology, Inc.: *See*—
Jiminez, Oscar; and Bianco, Frank J., 4,434,801, Cl. 128-689.000.

Biotest-Serum-Institut GmbH: *See*—
Walker, Wolfram H., 4,435,179, Cl. 604-410.000.

Bird, Elizabeth A. Strap. 4,434,604, Cl. 54-23.000.

Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, to Siemens Aktiengesellschaft. Device for electro-deposition of aluminum. 4,435,265, Cl. 204-198.000.

Bishop, Robert J. Rotary drum mixing device. 4,435,082, Cl. 366-47.000.

Bisler, Kenneth E.: *See*—
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.

Black Clawson Co., The: *See*—
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.

Black & Decker Inc.: *See*—
McDougall, Robert J., 4,434,587, Cl. 51-170.0MT.

Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., to Holmberg Electronics Corporation. Connector block with snap latch. 4,435,031, Cl. 339-17.00C.

Black, William R. Police gripper. 4,435,008, Cl. 294-25.000.

Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., to Imperial Chemical Industries PLC. Quinoline derivatives which are 5-hydroxytryptamine antagonists. 4,435,405, Cl. 424-258.000.

Blackshaw, Andrew L.: *See*—
Sanborn, David M.; and Blackshaw, Andrew L., 4,434,539, Cl. 29-157.30V.

Blank, Heinz U.: *See*—
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,435,336, Cl. 260-508.000.

Blaupunkt-Werke GmbH: *See*—
Eilers, Norbert; and Bragas, Peter, 4,435,843, Cl. 455-205.000.
Timm, Horst; and Kruger, H. Eckard, 4,435,845, Cl. 455-228.000.
Wilke, Heinz; and Fonck, Klaus-Uwe, 4,434,550, Cl. 29-837.000.

Blazek, Vladislav: *See*—
Maly, Zdenek; and Blazek, Vladislav, 4,435,080, Cl. 356-426.000.

Blechinger, Chester J., to Ford Motor Company. Mass air flow sensor. 4,434,656, Cl. 73-204.000.

Bleuel, Felix; and Bosshard, Christian, to Ciba-Geigy Corporation. Flange having an outer and an inner circumferential sealing face and apparatus, comprising such flange, for producing enveloping casts about elongated bodies. 4,434,962, Cl. 249-65.000.

Bliss, Robert H., to Bliss Steel Products Corp. Window frame or door frame section. 4,434,594, Cl. 52-209.000.

Bliss Steel Products Corp.: *See*—
Bliss, Robert H., 4,434,594, Cl. 52-209.000.

Blomqvist, Thomas H.; and Lidstom, Thorbjorn G. Firewood cleaving apparatus. 4,434,825, Cl. 144-193.00A.

Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Use in augmenting or enhancing the aroma or taste of foodstuff or chewing gum with the methyl carbonate of 1-hydroxymethyl-2-heptanoyl cyclopropane. 4,435,428, Cl. 426-3.000.

Boden, Richard M.: *See*—
Licciardello, Michael; and Boden, Richard M., 4,435,331, Cl. 260-463.000.

Bodine, Albert G. Mass (inductive) reactance vibratory mill or crusher employing mechanical drive force. 4,434,944, Cl. 241-258.000.

Bodnar, Janos: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Boeckmann, Eduard F. B.: *See*—
Grantland, Gary; and Boeckmann, Eduard F. B., 4,435,622, Cl. 179-81.00R.

Boeing Company, The: *See*—
Rudolph, Peter K. C., 4,434,959, Cl. 244-215.000.

Boesel, Walter F., to Garrett Corporation, The. Magnetic interpole apparatus for improving commutation characteristics of a dynamoelectric machine. 4,435,664, Cl. 310-186.000.

Boise Cascade Corporation: *See*—
Hoelzinger, Walther J., 4,435,237, Cl. 156-157.000.

Boland, John D.; and Kresky, Fred C., to Aeroquip Corporation. Adjustable load bracing bar. 4,434,970, Cl. 254-108.000.

Boldt, Allyn L., to Exxon Nuclear Company, Inc. Continuous countercurrent liquid-solids contactor. 4,435,363, Cl. 422-270.000.

Bolner, Thomas E., to Thiokol Corporation. Internally actuated spherical bearing. 4,435,023, Cl. 308-2.00R.

Bolt, Anthony J. N.; and Chard, Brian C., to Imperial Group Limited. Smoking article. 4,434,804, Cl. 131-309.000.

Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., to Carrier Corporation. Grille mounting means and method. 4,434,710, Cl. 98-94.0AC.

Bonansea, Hubert: *See*—
Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, 4,434,888, Cl. 198-466.000.

Bonaparte, Ennio; and Mosca, Virgilio, to Italtel Societa Italiana Telecomunicazioni S.p.A. Switching network interfacing telephone-exchange equipment with two-subscriber party line. 4,435,619, Cl. 179-17.00R.

Bondioli, Edi. Guard made up of sectional units for cardan shafts. 4,435,166, Cl. 464-172.000.

Borgato, Augusto, to F.A.M.A. di Sandra Borgato & C., S.n.c. Manually and electrically commanded automatic hooklock. 4,434,635, Cl. 70-279.000.

Bosch & Pierburg System OHG: *See*—
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Bosits, Gyula: *See*—
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Bosshard, Christian: *See*—
Bleuel, Felix; and Bosshard, Christian, 4,434,962, Cl. 249-65.000.

Boudault, Robert; and Pouzoullic, Gerard, to U.S. Philips Corporation. Frequency demodulator employing a circuit having a delay varying with the received frequency. 4,435,682, Cl. 329-107.000.

Bourgeois, Dale M., to Bourgeois, Wayne; and Hebert, LeRoy, part interest to each. Oil well blow out control valve. 4,434,853, Cl. 166-285.000.

Bourgeois, Wayne: *See*—
Bourgeois, Dale M., 4,434,853, Cl. 166-285.000.

Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., to Delalande S.A. N-Aryl oxazolidinones, oxazolidinethiones, pyrrolidinones, pyrrolidines and thiazolidinones. 4,435,415, Cl. 424-272.000.

Bovenkerk, Harold P., to General Electric Company. Method of preparing rough textured metal coated abrasives and product resulting therefrom. 4,435,189, Cl. 51-295.000.

Bowden, Charles J., to General Signal Corporation. Control valve for double-acting piston and valve assemblies. 4,434,708, Cl. 91-436.000.

Bowen, James H.; Baldwin, David L.; and Couch, Philip R., to International Telephone and Telegraph Corporation. Secure fiber optic data transmission system. 4,435,850, Cl. 455-606.000.

Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, to Raytheon Company. Seed heating microwave appliance. 4,435,628, Cl. 219-10.55M.

Bowles, Corwin. Screwdriver. 4,434,688, Cl. 81-451.000.

Brabander, Herbert J.: *See*—
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., 4,435,419, Cl. 424-274.000.

Brady, Thomas E.: *See*—
Loffelman, Frank F.; and Brady, Thomas E., 4,435,555, Cl. 526-261.000.

Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rabtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, to Schering Aktiengesellschaft. Pharmacologically active 3-substituted beta-carbolines. 4,435,403, Cl. 424-256.000.

Bragas, Peter: *See*—
Eilers, Norbert; and Bragas, Peter, 4,435,843, Cl. 455-205.000.

Braggins, John C., Jr. Heat recovery system for clothes dryers and the like. 4,434,564, Cl. 34-86.000.

Brandenstein, Manfred: *See*—
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, 4,434,640, Cl. 72-348.000.

Brandes, Wilhelm: *See*—
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.

Brandon, Maurits J.: *See*—
Terink, Johannes L.; and Brandon, Maurits J., 4,435,436, Cl. 426-631.000.

Brandsen, Donald H.; and Hoerner, Griffith L. Flexibly-supported, pivotable load carrier for vehicles. 4,434,922, Cl. 224-314.000.

Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., to Dr. Beck & Co. AG. Antistatic thermoplastic molding masses containing styrene-acrylonitrile grafted polyether. 4,435,541, Cl. 525-64.000.

Brannegan, Daniel P.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.

Brannen, Cecil G.; and Hunt, Mack W., to Standard Oil Company, (Indiana). Preparation of overbased magnesium phenates. 4,435,301, Cl. 252-33.200.

Brantingham, George L.; and Someshwar, Ashok H., to Texas Instruments Incorporated. Data processing system having interlinked slow and fast memory means. 4,435,775, Cl. 364-900.000.

Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, to Northern Engineering Industries, Plc. Fluidized-bed combustion apparatus. 4,434,723, Cl. 110-245.000.

Bredow, Walter, to C. Behrens AG. Arrangement for producing drawn formations on workpieces, particularly in a cutting and pressing machine. 4,434,639, Cl. 72-344.000.

Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., to U.S. Philips Corporation. Device for propagating magnetic domains. 4,435,484, Cl. 428-693.000.

Brennan, John J.: *See*—
Prewo, Karl M.; and Brennan, John J., 4,435,455, Cl. 428-36.000.

Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Preparation of gamma-pyrones. 4,435,584, Cl. 549-415.000.

Brenner, Horst; and Hinsberg, Rene, to Bayerische Motoren Werke A.G. Rear wheel control unit for two-wheeled vehicles with universal drive mechanism. 4,434,868, Cl. 180-226.000.

Brenner, Norbert: *See*—
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.

Breslau, Barry R., to Romicon, Inc. Series ultrafiltration with pressurized permeate. 4,435,289, Cl. 210-637.000.

Brigham, Gerald A.: *See*—
Marshall, William J., Jr.; and Brigham, Gerald A., 4,435,794, Cl. 367-155.000.

Bristol Composite Materials Engineering Limited: *See*—
McNulty, John P., 4,435,242, Cl. 156-264.000.

Bristol-Myers Company: *See*—
Shin, Chung T.; and Geria, Navin, 4,435,382, Cl. 424-66.000.

British Petroleum Company Limited, The: *See*—
Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., 4,435,296, Cl. 252-28.000.

Brix, Joachim; and Weiss, Friedrich, to Jastram-Werke GmbH KG. Fin rudder for ships. 4,434,739, Cl. 114-162.000.

Broersma, Lester V.: *See*—
Sundahl, James G.; and Broersma, Lester V., 4,434,514, Cl. 2-425.000.

Brohltal-Deumag AG fur feuerfeste Erzeugnisse: *See*—
Buhler, Hans-Eugen; and Kalfa, Horst, 4,435,157, Cl. 432-30.000.

Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., to British Petroleum Company Limited, The. Lubricating grease. 4,435,296, Cl. 252-28.000.

Brooks, George D.: *See*—
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,434,700, Cl. 89-34.000.

Brower, Boyd G., to GTE Products Corporation. Subminiature array with normally closed and normally open switches. 4,435,156, Cl. 431-359.000.

Brugman, Martin; and Van Schaik, Herman, to S. C. Johnson & Sons, Inc. Overcap orienting apparatus. 4,434,885, Cl. 198-388.000.

Bruns, Klaus: *See*—
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,435,315, Cl. 252-522.00R.

Brusewitz, Gerhard: *See*—
Sieck, Reinhard; and Brusewitz, Gerhard, 4,434,890, Cl. 206-443.000.

Brush, Robert W., Sr.; and Piscitelli, R. Amelia, to Bendix Corporation, The. Method of making a pin type electrical connector contact. 4,434,552, Cl. 29-876.000.

BS&B Safety Systems, Inc.: *See*—
Ou, Sam A.; and Beair, Charles E., 4,434,905, Cl. 220-89.00A.

Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, to American Screen Printing Equipment Company. Curing apparatus and method. 4,434,562, Cl. 34-4.000.

Buchel, Karl: *See*—
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.

Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, to Robert Bosch GmbH. Pneumatically operable switch unit for monitoring tire pressure. 4,435,625, Cl. 200-61.220.

Buck Chemisch-Technische Werke GmbH & Co.: *See*—
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Buckau-Walther AG: *See*—
Bechthold, Horst, 4,435,341, Cl. 264-7.000.

Buckeye Molding Company: *See*—
French, William L., 4,434,908, Cl. 220-276.000.

Buda, Salvatore: *See*—
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,435,005, Cl. 285-31.000.

Budd Company, The: *See*—
Mekosh, George, Jr., 4,434,719, Cl. 105-168.000.

Buell Industries, Inc.: *See*—
Becker, Philip D., 4,435,112, Cl. 411-368.000.

Buhler, Hans-Eugen; and Kalfa, Horst, to Brohltal-Deumag AG fur feuerfeste Erzeugnisse. Heat exchanger, especially blast preheater (or cowper) for blast furnaces, process for the temperature regulation of gas and blast for the blast furnace, as well as use of the process. 4,435,157, Cl. 432-30.000.

Buhler, Karl, to BBC Brown, Boveri & Company, Limited. Liquid-cooled vessel walls for arc furnaces. 4,435,814, Cl. 373-76.000.

Burak, Mark G. Anti-skid device for a cane, crutch, or the like. 4,434,808, Cl. 135-80.000.

Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, to Schering AG. Hardenable urethane-epoxy resin mixtures. 4,435,558, Cl. 528-45.000.

Burgess, Anthony J.; and Gardner, David L., to Imperial Chemical Industries PLC. Vinylidene chloride co-polymer compositions. 4,435,478, Cl. 428-463.000.

Burgess, Warren C., Jr. Automatically adjustable workpiece guide and feed mechanism. 4,434,583, Cl. 51-103.0TF.

Burkel, Rainer: *See*—
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.

Burroughs Corporation: *See*—
Baillie, Alan G., 4,435,498, Cl. 430-318.000.
Hsieh, Der-Chang; and LaBudde, Edward V., 4,435,797, Cl. 369-32.000.
Murray, Lance R.; and Wu, Ta-Ming, 4,435,658, Cl. 307-530.000.
Potash, Hanan, 4,435,756, Cl. 364-200.000.

Burroughs Wellcome Co.: *See*—
Stern, Warren C., 4,435,449, Cl. 424-330.000.

Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, to Canadian Patents and Development Limited. Processing aqueous treated cereals. 4,435,429, Cl. 426-18.000.

Busch, Helmut: *See*—
Kupper, Heinz; and Busch, Helmut, 4,434,940, Cl. 239-397.500.

Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., to Ashland Oil, Inc. Method and apparatus for converting oil feeds. 4,435,279, Cl. 208-111.000.

Buss, Waldeen C.; and Hughes, Thomas R., to Chevron Research Company. Method of dehydrocyclizing alkanes. 4,435,283, Cl. 208-138.000.

Bussey, Patrick D. Router guide. 4,434,824, Cl. 144-134.00D.

Butcher, Bruce A.: *See*—
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.

Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., to United States of America, Navy. Penetrator interface adapter concept. 4,434,927, Cl. 227-9.000.

Butler, John V.: *See*—
Whitcomb, William T.; and Butler, John V., 4,434,647, Cl. 73-1.00R.

Butts, Susan B.; and Hartwell, George E., to Dow Chemical Company, The. Process for preparation of 2-phenylethyl alcohols from aromatic aldehydes. 4,435,605, Cl. 568-878.000.

C. Behrens AG: *See*—
Bredow, Walter, 4,434,639, Cl. 72-344.000.

Cacaofabrik DeZaan B.V.: *See*—
Terink, Johannes L.; and Brandon, Maurits J., 4,435,436, Cl. 426-631.000.

Cady, William S.: *See*—
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., 4,435,822, Cl. 375-1.000.

Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, to Montedison S.p.A. Process for preparing carboxylated organic compounds. 4,435,575, Cl. 546-341.000.

Calhoun, Bill L.: *See*—
Calhoun, Tom L.; and Calhoun, Bill L., 4,435,084, Cl. 366-130.000.

Calhoun, Tom L.; and Calhoun, Bill L. Automatic stirrer for cup. 4,435,084, Cl. 366-130.000.

Callan, John E., to Allen-Bradley Company. Switch network. 4,435,706, Cl. 340-825.080.

Calvert, James W.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

Campbell, Simon F.; and Plews, Rhona M., to Pfizer Inc. 4-Amino-6,7-dimethoxy-2-(4-heteroaryl-piperazino)quinazoline antihypertensives. 4,435,401, Cl. 424-251.000.

Campbell, Willis R., to Sperry Corporation. Overfill protection apparatus for roll baling machine. 4,434,607, Cl. 56-341.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy: *See*—
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., 4,435,280, Cl. 208-112.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Perlman, Martin M.; and Filion, Andre Y., 4,435,610, Cl. 136-255.000.

Canadian Patents and Development Limited: *See*—
Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, 4,435,429, Cl. 426-18.000.

Caniglia, Joseph E. Eyeglass wiping device. 4,434,520, Cl. 15-214.000.

Canon Kabushiki Kaisha: *See*—
Adachi, Hiroyuki; and Hosono, Nagao, 4,435,072, Cl. 355-3.0FU.
Eida, Tsuyoshi; and Kobayashi, Masatsune, 4,435,717, Cl. 346-1.100.
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.
Kitajima, Tadayuki, 4,435,070, Cl. 355-8.000.
Shimizu, Masami; and Uchidoi, Masanori, 4,435,741, Cl. 361-401.000.

Cantrell John L.: *See*—
Ribi, Edgar E.; and Cantrell John L., 4,435,386, Cl. 424-177.000.

Caporaso, John A., to Nabisco Brands, Inc. Packaging system for fully baked, unfilled pastry shells. 4,435,434, Cl. 426-108.000.

Cappelli, Romano, to USS Engineers and Consultants, Inc. Process for repairing or modifying refractory plates of ladle casting cassettes. 4,434,540, Cl. 29-402.110.

Caputo, William R., to Westinghouse Electric Corp. Elevator system. 4,434,874, Cl. 187-29.00R.

Carasso, Marino G.: *See*—
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., 4,435,687, Cl. 331-23.000.

Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, to Montedison S.p.A. Method

for the recovery of pentaerythritol from the residual mixtures of the synthesis from acetaldehyde and formaldehyde. 4,435,604, Cl. 568-854.000.

Cardini, Jean-Louis, to Societe Metallurgique Le Nickels-S.L.N. Process and apparatus for attrition carried out in a humid medium. 4,434,942, Cl. 241-21.000.

Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., to Texaco Inc. Preparation of high dropping point lithium complex soap grease. 4,435,299, Cl. 252-41.000.

Carlsmith, Lawrence A.: *See*—
Luthi, Oscar; and Carlsmith, Lawrence A., 4,435,085, Cl. 366-155.000.

Carr, Albert A.; Farr, Robert A.; and Kane, John M., to Richardson Merrell Inc. 5-(Substituted benzyl)-6-oxo-2-piperazine carboxylic acids and esters. 4,435,571, Cl. 544-384.000.

Carrier Corporation: *See*—
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,434,710, Cl. 98-94.0AC.
Jackson, Dale; and McManus, John R., 4,434,841, Cl. 165-125.000.

Carter, John W.: *See*—
Rhodes, Lawrence G.; and Carter, John W., 4,434,606, Cl. 56-106.000.

Casaceli, Frank B.: *See*—
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,434,754, Cl. 123-146.50A.

Cascade Corporation: *See*—
House, Marshall K., 4,435,117, Cl. 414-620.000.
House, Marshall K., 4,435,119, Cl. 414-620.000.

Casdas, Spyridon, to Aluminium de Grece. Process and apparatus for controlled feed of alumina and halogen additives into electrolysis vats for the production of aluminum. 4,435,255, Cl. 204-67.000.

Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., to International Business Machines Corporation. Method for editing spatially related data in an interactive text processing system. 4,435,778, Cl. 364-900.000.

Castellucci, Nicholas T.: *See*—
Kaylo, Alan J.; and Castellucci, Nicholas T., 4,435,529, Cl. 523-426.000.

Casterline, Russ C.: *See*—
Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., 4,435,803, Cl. 370-16.000.

Castle & Cooke Techniculture: *See*—
Sowerwine, Owen D., 4,434,576, Cl. 47-39.000.

Caterpillar Tractor Co.: *See*—
Bailey, John M., 4,434,637, Cl. 72-17.000.
Riediger, Craig W.; and Winzeler, James E., 4,434,680, Cl. 74-682.000.

Centre National d'Etudes Spatiales: *See*—
Rougeron, Michel; and Simon, Jacques, 4,434,958, Cl. 244-126.000.

Cesark, Frank F.; and Thomas, Daniel W., to American Cyanamid Company. Oxime ethers of 4,4'-bis(N,N-diethylamino)benzhydrol and pressure-sensitive recording systems containing them. 4,435,002, Cl. 282-27.500.

Chachowski, Rosemary K.: *See*—
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,435,293, Cl. 210-772.000.

Chadshay, Roman, to Combustion Engineering, Inc. Burner-tilt drive apparatus for a pulverized coal fired steam generator. 4,434,747, Cl. 122-449.000.

Chaki, Takao, to Clarion Co., Ltd. Cross arm structure for use in a pushbutton tuner. 4,434,673, Cl. 74-10.330.

Challenger Caribbean Corporation: *See*—
Sepulveda, Luis F., 4,435,624, Cl. 200-42.00T.

Challenger Circle F, Inc.: *See*—
Abramson, Allen P.; and Stiles, Theodore R., 4,435,032, Cl. 339-36.000.

Challenger Products Corporation: *See*—
Sepulveda, Luis F., 4,435,624, Cl. 200-42.00T.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Activity enhancement of high silica zeolites. 4,435,516, Cl. 502-71.000.

Chang, Mike S. H., to Pitney Bowes Inc. Radiation curable composition of vinyl polysiloxane and hydrogen polysiloxane with photosensitizer. 4,435,259, Cl. 204-159.130.

Chapman, Arthur S.: *See*—
Rozner, Marvin J.; and Chapman, Arthur S., 4,434,702, Cl. 89-36.00L.

Chapman, John A.; and Sherwin, Owen W., to Valmont Industries, Inc. Irrigation system. 4,434,936, Cl. 239-178.000.

Chapman, Richard A., to Texas Instruments Incorporated. Unipolar voltage non-volatile JRAM cell. 4,435,785, Cl. 365-147.000.

Chard, Brian C.: *See*—
Bolt, Anthony J. N.; and Chard, Brian C., 4,434,804, Cl. 131-309.000.

Charles, Georges M., to Potain Poclain Materiel (P.P.M.). Hoisting winch. 4,434,972, Cl. 254-340.000.

Chea, Ramon C. W., Jr.: *See*—
Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., 4,435,803, Cl. 370-16.000.

Chen, Hong C., to Chezon Research Co. Hydroprocessing with a catalyst having bimodal pore distribution. 4,435,278, Cl. 208-251.00H.

Chen, Shu-Chang: *See*—
Yeh, Jaw S., 4,434,818, Cl. 140-82.000.

Chevron Research Company: *See*—
Aoyagi, Edward I., 4,435,416, Cl. 424-273.00P.
Buss, Waldeen C.; and Hughes, Thomas R., 4,435,283, Cl. 208-138.000.
Ferm, Richard L.; and Kray, Louis R., 4,435,273, Cl. 208-48.0AA.
Woo, Gar L.; and Parker, Phillip H., 4,435,547, Cl. 525-420.000.

Chezon Research Co.: *See*—
Chen, Hong C., 4,435,278, Cl. 208-251.00H.

Chiba, Kazuo; and Nakamura, Iwao, to Nissan Motor Company, Limited. Strut type suspension for a vehicle. 4,434,977, Cl. 267-33.000.

Chiba, Masakazu; and Matsuoka, Fumio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt tightening device. 4,435,000, Cl. 280-806.000.

Chihara, Hiroyuki; and Kitano, Masuo, to Kabushiki Kaisha Suwa Seikosha; and Shimauchi Seiki Kabushiki Kaisha. Power circuit for an electronic timepiece. 4,435,089, Cl. 368-204.000.

Childs, John M. Wind-scoop for small boats. 4,434,740, Cl. 114-211.000.

Chimica Bulciago S.r.l.: *See*—
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, 4,435,333, Cl. 260-465.00D.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T.: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Chomerics, Inc.: *See*—
Powers, Donald H., Jr., 4,434,541, Cl. 29-526.00R.

Chow, Alfred W., to SmithKline Beckman Corporation. 5-Phenylethenylbenzimidazoles. 4,435,418, Cl. 424-273.00B.

Chow, Yiu T.; and Gilligan, Thomas J., to Ampex Corporation. Method of selecting PROM data for selective mapping system. 4,435,754, Cl. 364-200.000.

Christensen, Jogen A.: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Christian, Jerry B.: *See*—
Sipos, George G.; and Christian, Jerry B., 4,435,173, Cl. 609-155.000.

Christie, William C., to Goodyear Tire & Rubber Company, The. Automated tire measurement techniques. 4,434,652, Cl. 73-146.000.

Christopher, Terry M.; and Nelson, Randolph J., to FMC Corporation. Hydraulic winch speed control with pressure-responsive override. 4,434,616, Cl. 60-451.000.

Chugai Seiyaku Kabushiki Kaisha: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Ciaramitaro, David A.; and Moore, Jack M., to Apache Powder Company. Explosive composition. 4,435,232, Cl. 149-2.000.

Ciba-Geigy AG: *See*—
Muller, Beat; and Roth, Martin, 4,435,489, Cl. 430-17.000.

Ciba-Geigy Corporation: *See*—
Bleuel, Felix; and Bosshard, Christian, 4,434,962, Cl. 249-65.000.
Falk, Robert A., 4,435,330, Cl. 260-458.00F.
Fletcher, Ian J., 4,435,003, Cl. 282-27.500.
Irving, Edward, 4,435,497, Cl. 430-288.000.
Michaelis, Klaus-Peter; and Schneider, Rainer, 4,435,338, Cl. 260-929.000.
Walker, Gordon N., 4,435,407, Cl. 424-263.000.

Ciminiello, Francisco J.: *See*—
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Cincinnati Milacron Inc.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

Cities Service Co.: *See*—
Aylward, David E., 4,435,520, Cl. 502-107.000.
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., 4,435,518, Cl. 502-107.000.
Veazey, Richard L.; and Pennington, B. Timothy, 4,435,519, Cl. 502-107.000.

Citizen Watch Company Limited: *See*—
Kato, Yoshiaki, 4,435,086, Cl. 368-22.000.
Nishimura, Katsuo, 4,435,046, Cl. 350-334.000.
Saito, Motoyuki; and Hatanaka, Hideo, 4,435,796, Cl. 368-321.000.

CKD Controls Limited: *See*—
Tamura, Akira, 4,434,933, Cl. 236-75.000.

Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., to U.S. Philips Corporation. Method of and arrangement for calculating the discrete Fourier transform by means of two circular convolutions. 4,435,774, Cl. 364-726.000.

Clarion Co., Ltd.: *See*—
Chaki, Takao, 4,434,673, Cl. 74-10.330.

Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., to Mead Corporation, The. Ink drop printing system. 4,435,718, Cl. 346-75.000.

Clark, John F., to Sperry Corporation. Weather radar with signal compensation for precipitation. 4,435,707, Cl. 343-5.00W.

Clarke, Brian P.: *See*—
Stirling, Irene; and Clarke, Brian P., 4,435,565, Cl. 542-416.000.

Clatworthy, Edward F.: *See*—
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,435,359, Cl. 419-3.000.

Clay, Douglas R.: *See—*
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.
Clean-Tex A/S: *See—*
Neubert, Robert, 4,435,451, Cl. 428-15.000.
Cless, Richard D.: *See—*
Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., 4,435,572, Cl. 546-228.000.
Cleveland, William E., to SCM Corporation. Office machine escapement disengagement and automatic engagement mechanism. 4,435,098, Cl. 400-674.000.
Cocco, Vincent L., to Polaroid Corporation. Film processing apparatus. 4,435,062, Cl. 354-303.000.
Coffin, Christopher J., to Alan Cobham Engineering Limited. Pressure responsive switch actuating mechanism. 4,435,626, Cl. 200-81.90R.
Cohen, Leonard G.; and Mammel, Wanda L., to Bell Telephone Laboratories, Incorporated. Double-clad optical fiberguide. 4,435,040, Cl. 350-96.330.
Coleman, Charles: *See—*
Smith, Peter R.; and Coleman, Charles, 4,434,549, Cl. 29-832.000.
Coleman, Charles R., to PPG Industries, Inc. Method for applying abrasion resistant thin polyurethane coatings. 4,435,450, Cl. 427-385.500.
Coleman, Clint; and Carrin, Hugh D., to North Wind Power Company, Inc. Wind turbine rotor control system. 4,435,646, Cl. 290-44.000.
Colgate-Palmolive Company: *See—*
Fitzgerald, Harry G., 4,435,178, Cl. 604-365.000.
Colombo, Giancarlo: *See—*
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.
Colombo, Roberto, to Lavorazione Materie Plastiche L.M.P. S.p.A. Process for the production of a continuous sheet of foamed synthetic, thermoplastic polymer by extrusion. 4,435,345, Cl. 264-53.000.
Colt Industries Operating Corp.: *See—*
Eshelman, Philip V., 4,434,765, Cl. 123-472.000.
McCabe, Ralph P., 4,434,762, Cl. 123-438.000.
McCabe, Ralph P.; and Marsh, Keith D., 4,434,763, Cl. 123-440.000.
Colton, Russell F., to Rockwell International Corporation. Low cost capacitive accelerometer. 4,435,737, Cl. 361-280.000.
Combeau, Guy. Apparatus for screen printing bottles. 4,434,714, Cl. 101-38.00A.
Combustion Engineering, Inc.: *See—*
Chadshay, Roman, 4,434,747, Cl. 122-449.000.
Johnson, Walter R., 4,435,693, Cl. 338-238.000.
Jones, Brian C., 4,434,726, Cl. 110-347.000.
Kunkel, Robert C., Jr., 4,434,724, Cl. 110-269.000.
McCartney, Michael S., 4,434,727, Cl. 110-347.000.
Comeyne, Robert G., to United States of America, Army. Aiming aid for an aiming device in a low light level environment. 4,434,560, Cl. 33-241.000.
Commander Electrical Equipment, Inc.: *See—*
Sepulveda, Luis F., 4,435,624, Cl. 200-42.00T.
Commissariat a l'Energie Atomique: *See—*
Pascal, Daniel; and Duret, Denis, 4,434,547, Cl. 29-599.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
Pearce, Robert J., 4,435,319, Cl. 260-123.500.
Communication Technology Corporation: *See—*
Smith, Donald J., 4,435,612, Cl. 174-92.000.
Complói, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, to Aktiengesellschaft Adolf Saurer. Electromagnetic pattern selector for an embroidery machine. 4,434,728, Cl. 112-84.000.
Compur-Electronic GmbH: *See—*
Stower, Reinhard, 4,435,167, Cl. 494-16.000.
Comstock, James F.: *See—*
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., 4,434,644, Cl. 72-387.000.
Conklin, Jerry R.: *See—*
Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., 4,435,548, Cl. 525-451.000.
Conoco Inc.: *See—*
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.
Stokke, Olaf M.; and Sias, Roy C., 4,435,295, Cl. 252-8.55D.
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Use of alkyl-substituted 1,3-dioxolanes as perfuming agents. 4,435,315, Cl. 252-522.00R.
Constant, Bernard: *See—*
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Continental Group, Inc., The: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., 4,435,244, Cl. 156-379.800.
Control Data Corporation: *See—*
Cree, Roger W., 4,434,625, Cl. 62-199.000.
Conviser, Harry. Instrument for comparing equal temperament and just intonation. 4,434,696, Cl. 84-1.010.
Cook, Gregory E., to Windpowered Machines Ltd. Wind turbine spindle assembly with spindle constraint. 4,435,125, Cl. 416-132.00B.
Cook, Melvin W., to Masonite Corporation. Free standing article display apparatus. 4,434,900, Cl. 211-189.000.
Cook, Russell P., Sr.: *See—*
Roop, Michael R.; and Cook, Russell P., Sr., 4,434,869, Cl. 182-10.000.
Cooke, Carl W. Safety closure and container. 4,434,903, Cl. 215-222.000.
Cooper Industries, Inc.: *See—*
LaCount, Kenneth H., 4,434,974, Cl. 254-360.000.
Corbett, Herbert O., to National Distillers and Chemical Corporation. Method of extruding laminated film. 4,435,241, Cl. 156-244.110.
Cordrey, Richard N., to Armco Inc. Drilling rig drawworks hook load overspeed preventing system. 4,434,971, Cl. 254-273.000.
Cornell Research Foundation, Inc.: *See—*
Drost, Cornelis J.; and Milanowski, G. Jan, 4,434,648, Cl. 73-1.0DV.
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, to Ruhrchemie Aktiengesellschaft. Method for preventing caking of polyols. 4,435,603, Cl. 568-701.000.
Cotton Incorporated: *See—*
Winch, Allen R.; and Rearick, William A., 4,434,633, Cl. 68-267.000.
Couch, Philip R.: *See—*
Bowen, James H.; Baldwin, David L.; and Couch, Philip R., 4,435,850, Cl. 455-606.000.
Coulson Heel Inc.: *See—*
Ponzielli, Giuseppe, 4,435,523, Cl. 521-51.000.
Cox, Barry: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Cox, James W., Jr.: *See—*
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Cox, Ronald L., to McDonnell Douglas Corporation. Fail-safe zero-load hinge/pivot. 4,435,100, Cl. 403-27.000.
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, to Givaudan Corporation. Process for the preparation of dihydrocinnamaldehyde derivatives. 4,435,585, Cl. 549-446.000.
Crane, Foy Aline, executrix: *See—*
Crane, John H., deceased; and Crane, Foy Aline, executrix, 4,434,856, Cl. 172-256.000.
Crane, John H., deceased; and Crane, Foy Aline, executrix. Garden plow with support means operative to inversely angularly displace earthworking tool. 4,434,856, Cl. 172-256.000.
Cree, Roger W., to Control Data Corporation. Computer cooling system. 4,434,625, Cl. 62-199.000.
Crete, Paul G.: *See—*
Williamson, James; and Crete, Paul G., 4,435,847, Cl. 455-260.000.
Creusot-Loire: *See—*
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Crimmin, Michael J.: *See—*
Rogers, Norman H.; and Crimmin, Michael J., 4,435,583, Cl. 549-414.000.
Cronin, Michael J.; and Seid, Gordon, to Lockheed Corporation. Energy-efficient all-electric ECS for aircraft. 4,434,624, Cl. 62-172.000.
Csako, Denes: *See—*
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.
CTS Corporation: *See—*
Ginn, Steven N., 4,435,691, Cl. 338-125.000.
Cue, Berkeley W., Jr.; and Moore, Bernard S., to Pfizer Inc. Sorbinil by optical resolution of precursor 6-fluoro-4-ureidochroman-4-carboxylic acid. 4,435,578, Cl. 548-309.000.
Culpepper, Will L., to Mead Corporation, The. Tray loading machine. 4,434,602, Cl. 53-473.000.
Culver, Larry J.: *See—*
Jones, Glenn C.; and Culver, Larry J., 4,435,534, Cl. 524-292.000.
Currin, Hugh D.: *See—*
Coleman, Clint; and Currin, Hugh D., 4,435,646, Cl. 290-44.000.
Curry, Daniel L., Vice-President of St. Joseph Bank and Trust Company, executor: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,435,323, Cl. 548-473.000.
Curtis, Stanley F., to Pollution Controls Industries, Inc. Assembly for attachment to a vehicle for performing a work operation. 4,434,993, Cl. 280-402.000.
Cuscurida, Michael, to Texaco Inc. Polyester polymer polyols made with polyester polycarbonates and polyurethanes therefrom. 4,435,527, Cl. 521-173.000.
Cutter Laboratories, Inc.: *See—*
Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., 4,435,177, Cl. 604-263.000.
Czerwinski, Frank G.; and Rutty, Edward C., to Stanley Works, The. Power returnable coilable rule cartridge and coil rule assembly employing same. 4,434,952, Cl. 242-107.000.
DaGue, Michael G.; and Valone, Frederick W., to Texaco Inc. Corrosion inhibition system containing dicyclopentadiene sulfonate salts. 4,435,361, Cl. 422-12.000.
Dahms, Francis A., to Emhart Industries, Inc. Piston and cylinder mechanism. 4,434,674, Cl. 74-99.00A.
Daicel Chemical Industries, Ltd.: *See—*
Watanabe, Morio, 4,434,518, Cl. 12-142.0RS.
Watanabe, Shoji; and Miho, Takuya, 4,435,542, Cl. 525-118.000.
Daikin Kogyo Co., Ltd.: *See—*
Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, 4,434,844, Cl. 165-151.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Tatsunosuke, Masuda, 4,435,076, Cl. 355-41.000.

D'Alelio, Gaetano F., deceased (by Curry, Daniel L., Vice-President of St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Vinylacetylene-terminated polymide derivatives. 4,435,323, Cl. 548-473.000.

D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Bottle closure. 4,434,904, Cl. 215-232.000.

Damon Corporation: *See*—
Kennedy, A. Terence, 4,435,168, Cl. 494-20.000.

Danamps, Jean: *See*—
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.

Danfoss A/S: *See*—
Ohrberg, Carl V.; and Hansen, Gunnar L., 4,435,130, Cl. 417-310.000.

Daniels, Llewellyn R., Jr. Vehicle lift. 4,434,872, Cl. 187-8.740.

Dantzig, Jonathan A.: *See*—
Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., 4,434,837, Cl. 164-468.000.

Darnell, W. Dale, to Humboldt Products Corp. Surgical retractor array system. 4,434,791, Cl. 128-20.000.

Das, Balbhadra; and Moore, L. Dow, to PPG Industries, Inc. Aqueous sizing composition and sized glass fibers and method. 4,435,474, Cl. 428-391.000.

Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., to International Telephone and Telegraph Corporation. Analog subscriber/trunk module with shared ringing source and ring-trip. 4,435,803, Cl. 370-16.000.

Data General Corp.: *See*—
El-Gohary, Hussein T., 4,435,764, Cl. 364-200.000.
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.

Davidson, Donald R., to Singer Company, The. Continuous monogrammer. 4,434,729, Cl. 112-121.120.

Davies, Robert B.: *See*—
Joseph, Eric D.; and Davies, Robert B., 4,435,678, Cl. 323-273.000.

Davis, James A., to Firestone Tire & Rubber Company, The. Rubber compositions and articles thereof having improved metal adhesion and metal adhesion retention. 4,435,477, Cl. 428-462.000.

Davis, Robert C.; and Thaker, Gautam H., to Harris Corporation. Adaptive equalizer capable of linear and nonlinear weighting. 4,435,823, Cl. 375-14.000.

Dayco Corporation: *See*—
Standley, Paul M., 4,435,348, Cl. 264-174.000.

Deal, Troy M. Pump intake cutter head. 4,434,943, Cl. 241-46.080.

DeBona, Bruce T.: *See*—
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.

de Brabander, Louis F.; and Van Linthout, Luc K., to Fonds d'Etudes pour la Securite Routiere A.s.b.l. Electronic light beam tester. 4,435,078, Cl. 356-121.000.

de Brabant, Jean. Building structure. 4,434,595, Cl. 52-236.200.

Decuir, Joseph C.: *See*—
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.

Dedenon, Jean-Marie; and Rassak, Denis. Installation for preparing combustible gases through fermentation. 4,435,188, Cl. 48-111.000.

Deeks, Peter C.: *See*—
Williamson, Vivien R.; and Deeks, Peter C., 4,434,672, Cl. 73-864.220.

Deering, Roland F.; and Duir, John H., to Union Oil Company of California. Oil shale retorting process with a moving bed pressure letdown stage. 4,435,271, Cl. 208-11.00R.

Degremont: *See*—
Louboutin, Robert; and Riotte, Michel, 4,435,286, Cl. 210-116.000.

Degussa Aktiengesellschaft: *See*—
Diehl, Manfred; and Bergmann, Roland, 4,435,216, Cl. 106-97.000.
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.
Rothbuhr, Lothar, 4,435,377, Cl. 423-460.000.

Deininger, J. Paul, to Olin Corporation. Process for making potassium ferrate [Fe(VI)] by the electrochemical formation of sodium ferrate. 4,435,256, Cl. 204-86.000.

Deininger, J. Paul; and Dotson, Ronald L., to Olin Corporation. Process for the electrochemical production of sodium ferrate [Fe(VI)]. 4,435,257, Cl. 204-86.000.

Delagi, Richard G.: *See*—
Trenkler, George; and Delagi, Richard G., 4,434,930, Cl. 228-118.000.

Delalande S.A.: *See*—
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Del Fabbro, Dino, to Officine Riunite Udine Spa. Concrete mixing plants with elevator wheel. 4,435,081, Cl. 366-18.000.

Dellande, Brian W.; and Wurzburg, Henry, to Motorola, Inc. Communication system having improved differential phase shift keying modulation. 4,435,824, Cl. 375-46.000.

Dellinger, John J.: *See*—
Solomon, Robert A.; and Dellinger, John J., 4,434,722, Cl. 108-8.000.

Delta Medical Industries: *See*—
Siposs, George G.; and Christian, Jerry B., 4,435,173, Cl. 609-155.000.

Demarne, Henri; and Wagnon, Jean, to Societe Anonyme dite: Sanofi. Ethers of phenol active on the cardiovascular system, process for preparing same and use thereof in drugs. 4,435,426, Cl. 424-324.000.

Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, to Mitsubishi Rayon Co., Ltd. Hydrometallurgical process for selective dissolution of mixtures of oxy compounds. 4,435,368, Cl. 423-40.000.

Dematex Development & Investment Establishment: *See*—
Rilliet, Francois, 4,434,802, Cl. 128-764.000.

Demircan, Niyazi: *See*—
Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, 4,434,723, Cl. 110-245.000.

Dempsey, Edmond N., to Peerless Machine & Tool Corporation. Small blank feeder and tray former. 4,435,143, Cl. 425-150.000.

Denk, Jpseph; and Martin, William B., to Garrett Corporation, The. High speed accessory disconnect apparatus and methods. 4,434,881, Cl. 192-89.00A.

Dennis, James T.; and Kolomayets, George, to Dennis, James T. Automatic record player. 4,435,800, Cl. 369-225.000.

de Putter, Jan A.; and Tummers, Paul J. H., to Oce-Nederland B.V. Porous reusable ZnO electrophotographic element. 4,435,493, Cl. 430-87.000.

Derr, Walter R.; and Sarli, Michael S., to Mobil Oil Corporation. Hydrocracking process for aromatics production. 4,435,275, Cl. 208-89.000.

Desert, Jean-Marie G.; and Walrave, Franciskus J. Grid-type bread-slicing machine. 4,434,692, Cl. 83-62.000.

Desplats, Andre, to Tractel, S.A. Electric hoist. 4,434,973, Cl. 254-344.000.

Desvard, Alain: *See*—
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.

Detexomat Machinery Limited: *See*—
Hodges, Michael J., 4,434,918, Cl. 223-75.000.

De Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Compound with analgesic, antiinflammatory and antipyretic activity, and pharmaceutical compositions therefrom. 4,435,591, Cl. 560-73.000.

de Vries, Jacob. Apparatus for heating a sheet- or web-like material. 4,435,637, Cl. 219-358.000.

Dewilde, Francois: *See*—
Rouy, Noel; and Dewilde, Francois, 4,435,577, Cl. 548-221.000.

Deyo, Bruce, to Dresser Industries, Inc. Hoist pull down system for blast hole drill. 4,434,860, Cl. 173-147.000.

Dhein, Rolf: *See*—
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.

Diamond Shamrock Corporation: *See*—
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., 4,435,313, Cl. 502-101.000.

Diebold, Incorporated: *See*—
Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, 4,435,243, Cl. 156-361.000.

Diehl, Manfred; and Bergmann, Roland, to Degussa Aktiengesellschaft. Process for the accelerated solidification of hydraulic cement mixture. 4,435,216, Cl. 106-97.000.

Dienes Werke fur Maschinenteile GmbH & Co. KG: *See*—
Wingen, Peter, 4,434,695, Cl. 83-482.000.

Di Giovanni, Bernard A.; and Ciminiello, Francisco J. Service line interior by-pass fitting. 4,434,816, Cl. 138-109.000.

Dillard, Ewell F.: *See*—
Frazier, Alva W.; and Dillard, Ewell F., 4,435,372, Cl. 423-321.00R.

Dillon, Corbett L. Engine construction. 4,434,618, Cl. 60-528.000.

Dinbergs, Kornelius, to B. F. Goodrich Company, The. Process for preparing spherical and porous vinyl resin particles. 4,435,524, Cl. 521-65.000.

Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, to Institut Francais du Petrole. Process for the hydrotreatment of heavy hydrocarbons in the presence of reduced metals. 4,435,277, Cl. 208-108.000.

Dipper, Barry: *See*—
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Disa A/S (Dansk Industri Syndifat A/S): *See*—
Fog, Jorgen L.; and Nielsen, Jorgen, 4,434,703, Cl. 89-37.00B.

Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, to Hotchkiss-Brandt Sogeme H.B.S. Apparatus for supplying an article sorting machine conveyor, a method for using this apparatus. 4,434,888, Cl. 198-466.000.

Dobrovolny, Pierre, to Zenith Radio Corporation. Communications receiver having a switchable filter input stage. 4,435,841, Cl. 455-180.000.

Dr. Beck & Co. AG: *See*—
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Dr. C. Otto & Comp. GmbH: *See*—
Struck, Carl-Heinz; and Schumacher, Ralf, 4,435,152, Cl. 431-170.000.

Dr. Madaus & Co.: *See*—
Sieck, Reinhard; and Brusewitz, Gerhard, 4,434,890, Cl. 206-443.000.

Dodson, Stanley C.: *See*—
Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., 4,435,296, Cl. 252-28.000.

Doerr, Kermit W.: *See*—
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.

Doherty, Niall S.: *See*—
Harrison, Boyd L.; and Doherty, Niall S., 4,435,420, Cl. 424-277.000.

Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, to Nippon Electric Co., Ltd. Multilayer circuit and process for manufacturing the same. 4,434,544, Cl. 29-578.000.

Doi, Haruo: *See*—
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.

Doleschall, Gabor: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Dollman, David Y., to Amchem Products, Inc. Non-fluoride acid compositions for cleaning aluminum surfaces. 4,435,223, Cl. 134-3.000.

Domina, William G., to Dow Chemical Company, The. Concentrated emulsions of water-soluble polymers. 4,435,528, Cl. 523-332.000.

Dominquez, Richard J. G.; and Rice, Doris M., to Texaco Inc. Method for making a reinforced rim elastomer. 4,435,349, Cl. 264-257.000.

Donnelly Mirrors, Inc.: *See*—
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Doody, Jeffrey S.: *See*—
Gray, Lorin S., III; and Doody, Jeffrey S., 4,435,461, Cl. 428-141.000.

Dorfman, Leonard M., to Timex Corporation. Battery switch plate for a timepiece. 4,435,088, Cl. 368-88.000.

Dorris, Gordon L. Invalid's bathtub. 4,434,517, Cl. 4-585.000.

Dorville, Georges: *See*—
Gill, George; Souchier, Alain; and Dorville, Georges, 4,434,614, Cl. 60-271.000.

Dostert, Philippe L.: *See*—
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Dotson, Ronald L.: *See*—
Deininger, J. Paul; and Dotson, Ronald L., 4,435,257, Cl. 204-86.000.

Douzon, Colette A.: *See*—
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Dove, Thomas D.: *See*—
Mills, Larry E.; and Dove, Thomas D., 4,435,001, Cl. 282-11.50A.

Dow Chemical Company, The: *See*—
Butts, Susan B.; and Hartwell, George E., 4,435,605, Cl. 568-878.000.
Domina, William G., 4,435,528, Cl. 523-332.000.
Flagg, Edward E., 4,435,381, Cl. 424-54.000.
Gross, James R., 4,435,172, Cl. 604-368.000.
Hefner, Robert E., Jr., 4,435,530, Cl. 523-512.000.
Lau, Philip Y., 4,435,263, Cl. 204-197.000.
Lau, Philip Y., 4,435,264, Cl. 204-197.000.
Lysenko, Zenon; and Pews, Richard G., 4,435,573, Cl. 546-250.000.
McKinney, Linda D.; and Jenkines, Randall C., 4,435,459, Cl. 428-95.000.
Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., 4,435,379, Cl. 423-472.000.
Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., 4,435,548, Cl. 525-451.000.

Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., to Oce-Nederland B.V. Method and apparatus for transferring and fixing powder images. 4,435,067, Cl. 355-3.0TR.

Drechsel, Erhart K.: *See*—
Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., 4,435,370, Cl. 423-158.000.

Dresser Europe S.A.: *See*—
Parrott, George A., 4,435,018, Cl. 299-43.000.

Dresser Industries, Inc.: *See*—
Deyo, Bruce, 4,434,860, Cl. 173-147.000.
Montgomery, Marshall N., 4,434,653, Cl. 73-151.000.

Droitsch, Lutz: *See*—
Kranzle, Josef; and Droitsch, Lutz, 4,435,127, Cl. 417-26.000.

Drost, Cornelis J.; and Milanowski, G. Jan, to Cornell Research Foundation, Inc. Electroacoustic transducer calibration method and apparatus. 4,434,648, Cl. 73-1.0DV.

Drouet, Michel G.; and Nadeau, Francois, to Hydro Quebec. Method and device for controlling the length of an electrical arc in an arc generating machine. 4,435,631, Cl. 219-124.020.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Biocidal sulfur-containing bis-imino carbamate compounds. 4,435,421, Cl. 424-277.000.

Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., to Pharmindustrie. Derivatives of 10-(1-azabicyclo[2.2.2]oct-3-yl)-N,N dimethyl-10H-phenothiazine-2-sulfonamide as medicaments. 4,435,393, Cl. 424-246.000.

Dubur, Gunar Y.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Duffy, James J., to Ford Motor Company. Speed-sensitive power steering system. 4,434,866, Cl. 180-143.000.

Duir, John H.: *See*—
Deering, Roland F.; and Duir, John H., 4,435,271, Cl. 208-11.00R.

Dumont, Claude: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,435,408, Cl. 424-263.000.

Dunaway, Richard: *See*—
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.

Dundas, Dennis L.: *See*—
Myers, William H.; and Dundas, Dennis L., 4,435,147, Cl. 425-577.000.

Dunkelmann, Dietger: *See*—
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Dunphy, Gerald F.; and Best, Lance E., to Ogden Industries Pty. Limited. Lock. 4,434,634, Cl. 70-89.000.

Du Pont de Nemours, E. I., and Company: *See*—
Abramson, Edward A.; and Townsend, Peter K., 4,435,037, Cl. 350-96.200.
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 544-182.000.
Levitt, George, 4,435,206, Cl. 71-92.000.
Reap, James J., 4,435,205, Cl. 71-92.000.
Romanauskas, William A., 4,435,169, Cl. 494-20.000.
Wysong, Robert D., 4,435,383, Cl. 424-78.000.

Duracell Inc.: *See*—
Bahary, William S.; and Griffin, Rowland A., 4,435,488, Cl. 429-212.000.

Durand, Alain, to Societe Anonyme de Telecommunications. Process for preparing homogeneous layers of composition $Hg_{1-x}Cd_xTe$. 4,435,224, Cl. 148-1.500.

Duret, Denis: *See*—
Pascal, Daniel; and Duret, Denis, 4,434,547, Cl. 29-599.000.

Durot, Jean-Pierre: *See*—
Pivoteau, Jean; and Durot, Jean-Pierre, 4,435,479, Cl. 428-542.800.

Duyal, Tulay: *See*—
Walls, John E.; and Duyal, Tulay, 4,435,496, Cl. 430-285.000.

Dyer, Keith: *See*—
Rose, John A.; and Dyer, Keith, 4,434,730, Cl. 112-121.120.

Dynamit Nobel Aktiengesellschaft: *See*—
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.

Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., to Babcock & Wilcox Company, The. Load control for energy converters. 4,435,650, Cl. 307-32.000.

E. R. Squibb & Sons, Inc.: *See*—
Varma, Ravi K., 4,435,326, Cl. 260-397.300.

E-Tech, Inc.: *See*—
Sanborn, David M.; and Blackshaw, Andrew L., 4,434,539, Cl. 29-157.30V.

Eastin, John A. Manufacturing and using nitrogen fertilizer solutions on a farm. 4,435,201, Cl. 71-54.000.

Eastman Kodak Company: *See*—
Agreda, Victor H.; and Partin, Lee R., 4,435,595, Cl. 560-234.000.
Gourley, Robert N., 4,435,320, Cl. 260-152.000.
Harris, James E., 4,435,239, Cl. 156-180.000.
Jones, Glenn C.; and Culver, Larry J., 4,435,534, Cl. 524-292.000.
Lau, Philip T. S., 4,435,495, Cl. 430-218.000.
Leiental, Mark; and Steklenski, David J., 4,435,490, Cl. 430-45.000.
Maskasky, Joe E., 4,435,501, Cl. 430-434.000.
Reeves, John W., 4,435,499, Cl. 430-350.000.
Stryjewski, Walter A., 4,435,633, Cl. 219-216.000.
Vanier, Noel R., 4,435,502, Cl. 430-489.000.

Eaton Corporation: *See*—
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.
Shelvik, Bertrum S., 4,435,739, Cl. 361-346.000.
Swanson, Glen E.; and Garstick, Larry A., 4,434,833, Cl. 152-417.000.

Ebara Corporation: *See*—
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, 4,435,260, Cl. 204-164.000.

Ebi, Yutaka: *See*—
Horike, Masanori; and Ebi, Yutaka, 4,435,720, Cl. 346-75.000.

Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, to Bayer Aktiengesellschaft. Composite material for shielding against electromagnetic radiation. 4,435,465, Cl. 428-195.000.

Eckel Industries, Inc.: *See*—
Gilchrist, Henry R., 4,434,524, Cl. 16-250.000.

Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., to U.S. Philips Corporation. Amplifier arrangement. 4,435,685, Cl. 330-261.000.

Edelmann, Karl R. Thermostat housing assembly. 4,434,750, Cl. 123-41.020.

Eder, Ulrich: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Edgerley, Christopher J., to Electricity Council, The. Channel induction furnaces. 4,435,820, Cl. 373-161.000.
Edson Tool & Manufacturing Co., Inc.: *See—*
Prather, Joseph E.; Khalifa, Ramzl A.; and Wenzler, Peter B., 4,435,027, Cl. 312-222.000.
Egami, Tsuneyuki: *See—*
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Egan, William E.: *See—*
Landers, Samuel P.; and Egan, William E., 4,434,830, Cl. 152-209.00R.
Egawa, Takeshi: *See—*
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.
Ehrreich, John E., to Ercon, Inc. Conductive compositions. 4,435,214, Cl. 75-251.000.
Eichelberger, Charles W.: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,435,679, Cl. 323-350.000.
Eida, Tsuyoshi; and Kobayashi, Masatsune, to Canon Kabushiki Kaisha. Liquid jet recording process and recording liquid therefor. 4,435,717, Cl. 346-1.100.
Eilers, Norbert; and Bragas, Peter, to Blaupunkt-Werke GmbH. FM Receiver for general programs and special announcements. 4,435,843, Cl. 455-205.000.
Eisai Company, Limited: *See—*
Akatsuka, Shin-ichiro, 4,435,431, Cl. 426-36.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, to Robert Bosch GmbH. Device for generating specific electrical voltage values for consumers associated with an internal combustion engine. 4,435,745, Cl. 363-21.000.
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., to Huntington Alloys, Inc. Apparatus and method for fabricating tubes from powder. 4,435,359, Cl. 419-3.000.
Eisenhuth, Warren V. Device for lubricating muzzle-loading bullets and method for handling and loading the bullets. 4,434,571, Cl. 42-90.000.
Elbe, Hans-Ludwig: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.
Electricity Council, The: *See—*
Edgerley, Christopher J., 4,435,820, Cl. 373-161.000.
El-Gohary, Hussein T., to Data General Corp. Computer network having a single electrically continuous bi-directional bus. 4,435,764, Cl. 364-200.000.
Eli, Inc.: *See—*
Wouk, Victor, 4,435,671, Cl. 315-200.00R.
Elkem a/s: *See—*
Evensen, Knut, 4,435,815, Cl. 373-81.000.
Krogsrud, Harald, 4,435,817, Cl. 373-103.000.
Elton, Edward F.: *See—*
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, to Mitsui Toatsu Chemicals, Inc. Phenolic resin compositions. 4,435,543, Cl. 525-143.000.
EMAB Electrolux Motor Aktiebolag: *See—*
Nilsson, Ralph L.; and Rangert, Bo R., 4,434,756, Cl. 123-195.00R.
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, to Bayer Aktiengesellschaft. Process for the preparation of aromatic aminosulphonic acids. 4,435,336, Cl. 260-508.000.
Emerson Electric Co.: *See—*
Rippelmeyer, Dennis M., 4,435,150, Cl. 431-46.000.
Emhart Industries, Inc.: *See—*
Dahms, Francis A., 4,434,674, Cl. 74-99.00A.
Goode, Joseph W., III, 4,435,648, Cl. 307-10.00R.
Perry, Ralph A.; and Andrejasich, Raymond J., 4,434,650, Cl. 73-61.10R.
EMI Limited: *See—*
Johnston, Samuel J. B., 4,435,266, Cl. 204-276.000.
Emmrich, Bodo: *See—*
Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig. Karl O., 4,434,556, Cl. 30-123.400.
Endo, Kiyoshi: *See—*
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,435,587, Cl. 556-410.000.
Endo, Shuzo: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Endo, Toshiaki: *See—*
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.
Energy Conversion Devices, Inc.: *See—*
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.
Energy Equipment Company Limited, The: *See—*
Harman, Maurice, 4,435,158, Cl. 432-58.000.
Engel, Jurgen: *See—*
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.
Engelhard Corporation: *See—*
Bartholic, David B.; and Flanders, Robert L., 4,435,272, Cl. 208-127.000.
Engelsberger, Ernst; and Schulz, Ralf-Thilo, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Door, especially for motor vehicles. 4,434,580, Cl. 49-502.000.
Engelstoft, Mogens: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Ennes, John P. Vertical louver system. 4,434,834, Cl. 160-166.00A.
Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., to Battelle Development Corporation. Fluorescence laser EXAFS. 4,435,828, Cl. 378-49.000.
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., to American Cyanamid Company. Method of treating depression using azabicyclohexanes. 4,435,419, Cl. 424-274.000.
Erb, Harley E.: *See—*
Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., 4,434,896, Cl. 206-621.000.
Ercon, Inc.: *See—*
Ehrreich, John E., 4,435,214, Cl. 75-251.000.
Erich Schultze KG: *See—*
Schmidt, Manfred, 4,434,626, Cl. 62-470.000.
Erickson, Alan R., to Rockwell International Corporation. RF Imbalance detector. 4,435,683, Cl. 330-2.000.
Erickson, Lawrence F., to United States of America, Navy. Hybrid fuse triggering device. 4,434,717, Cl. 102-210.000.
Eshelman, Philip V., to Colt Industries Operating Corp. Fuel injection apparatus and system. 4,434,765, Cl. 123-472.000.
Esselte Pendaflex Corporation: *See—*
Holland-Letz, Gunter, 4,435,245, Cl. 156-384.000.
Ethicon, Inc.: *See—*
Mericle, Robert W., 4,434,795, Cl. 128-303.00R.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,435,590, Cl. 560-61.000.
Ethyl Products Company: *See—*
Kirk, Donald C., Jr., 4,434,915, Cl. 222-153.000.
Etou, Hironori: *See—*
Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, 4,435,151, Cl. 431-90.000.
Eue, Ludwig: *See—*
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, 4,435,208, Cl. 71-105.000.
Evans, George S.; Gilmore, John F.; and Morton, Edward W., to North American Philips Electric Corp. Energy conserving instant-start series-sequence fluorescent lamp system with overcurrent protection. 4,435,670, Cl. 315-58.000.
Evans, John D.: *See—*
Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., 4,434,902, Cl. 212-268.000.
Evens, Georges G., to Stamicarbon B.V. Process for the preparation of copolymers of ethylene with at least one other 1-alkene. 4,435,552, Cl. 526-140.000.
Evensen, Knut, to Elkem a/s. Method and apparatus for charging a furnace. 4,435,815, Cl. 373-81.000.
Eves, E. Eugene, II: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.
EVOG - Etablissement fur Verwaltung und Organisation: *See—*
Klupsch, Hans J., 4,435,432, Cl. 426-43.000.
FVVA-Werk Spezialerzeugung von Zylinder-und Sicherheitsschlossern GmbH & Co. KG: *See—*
Prunbauer, Kurt, 4,434,636, Cl. 70-358.000.
Excelermatic Inc.: *See—*
Horton, Paul L., 4,434,676, Cl. 74-200.000.
Kraus, Charles E., 4,434,675, Cl. 74-200.000.
Exxon Nuclear Company, Inc.: *See—*
Boldt, Allyn L., 4,435,363, Cl. 422-270.000.
Exxon Research and Engineering Co.: *See—*
Batzold, John S.; and Savas, Judith C., 4,435,267, Cl. 204-284.000.
Gschwendtner, Wolfgang W. J., 4,435,609, Cl. 585-670.000.
Koetsier, Wicher T.; and Verduijn, Johannes P., 4,435,608, Cl. 585-480.000.
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,435,261, Cl. 204-168.000.
Moss, Gerald, 4,435,148, Cl. 431-7.000.
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,435,521, Cl. 502-209.000.
F.A.M.A. di Sandra Borgato & C., S.n.c.: *See—*
Borgato, Augusto, 4,434,635, Cl. 70-279.000.
F. L. Smidth & Co.: *See—*
Knudsen, Hans B., 4,435,159, Cl. 432-106.000.
Fabian, David J.: *See—*
Berry, Donald A.; Fabian, David J.; and Lucius, John E., 4,435,035, Cl. 339-99.00R.
Fabrico Manufacturing Corp.: *See—*
Ross, Ashley M.; and McKee, James A., 4,434,712, Cl. 99-646.005.
Face, Samuel A., Jr.; and Face, Samuel A., III. Surface profile measuring apparatus and method. 4,434,558, Cl. 33-174.00P.

Face, Samuel A., III: *See—*
Face, Samuel A., Jr.; and Face, Samuel A., III, 4,434,558, Cl. 33-174.00P.
Fairchild Camera & Instrument Corporation: *See—*
Shideler, Jay A.; and Berry, Robert L., 4,435,225, Cl. 148-1.500.
Tickle, Andrew C., 4,435,786, Cl. 365-154.000.
Tickle, Andrew C.; and Vora, Madhukar B., 4,435,790, Cl. 365-218.000.
Fajt, John, to Xenell Corporation. Apparatus and methods for positioning electrical components. 4,434,886, Cl. 198-389.000.
Falk, Robert A., to Ciba-Geigy Corporation. Perfluoroalkyl-alkylene branched amphoteric sulfato betaines. 4,435,330, Cl. 260-458.00F.
Fardin, Carlos, to Van Dam Machine Corporation of America. Container lid separating assembly. 4,435,114, Cl. 414-330.000.
Farr, Robert A.: *See—*
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,435,571, Cl. 544-384.000.
Farrell, Kent. Thermal linear actuator. 4,435,665, Cl. 310-307.000.
Fasiczka, Ray G.: *See—*
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., 4,434,840, Cl. 165-82.000.
Faulkner, Gene M.: *See—*
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.
Favennec, Jean L.: *See—*
Henaff, Louis; Morel, Michel; and Favennec, Jean L., 4,434,742, Cl. 118-723.000.
Favie, Claude; and Mercadier, Michel, to Societe Nationale Elf Aquitaine (Production). Method of preparing cosmetological polymers. 4,435,545, Cl. 525-344.000.
Fay, Ralph M., to Manville Service Corporation. Hot melt adhesive for bonding paper to glass fiber. 4,435,469, Cl. 428-285.000.
Fechalos, William A.; and Stehman, Carl J., to Rockwell International Corporation. Dial pulse delay circuit. 4,435,620, Cl. 179-18.0EB.
Feldkamper, Richard, to Windmoller & Holscher. Apparatus for producing overlapping band rolls from superposed overlapping flat workpieces. 4,434,948, Cl. 242-59.000.
Felmeri, Jozsef: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Fergason, James L., to Manchester R & D Partnership. Encapsulated liquid crystal and method. 4,435,047, Cl. 350-334.000.
Ferm, Richard L.; and Kray, Louis R., to Chevron Research Company. Heat exchanger antifoulant. 4,435,273, Cl. 208-48.0AA.
Fernsler, Ronald E.: *See—*
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., 4,435,731, Cl. 358-243.000.
Fery, Guy A. Greeting card construction. 4,434,889, Cl. 206-216.000.
Fetter, Jozsef: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Fickelscher, Kurt G., to Balcke-Duerr AG. Planetary gear. 4,434,682, Cl. 74-805.000.
Field, Thomas R.: *See—*
Simon, Donald J.; and Field, Thomas R., 4,435,638, Cl. 219-460.000.
Fields: Ellis K.; and Nimry, Tayseer S., to Standard Oil Company (Indiana). Adducts of 1-cyclohexene-1,2-dicarboxylic anhydride with olefins. 4,435,593, Cl. 560-119.000.
Filion, Andre Y.: *See—*
Perlman, Martin M.; and Filion, Andre Y., 4,435,610, Cl. 136-255.000.
Filipic, Dusan: *See—*
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.
Firestone Tire & Rubber Company, The: *See—*
Davis, James A., 4,435,477, Cl. 428-462.000.
Gemar, Charles; and Meisch, Robert L., 4,434,953, Cl. 242-107.000.
Hausch, Walter R., 4,435,456, Cl. 428-36.000.
Kay, Edward L.; and Gutierrez, Richard, 4,435,337, Cl. 528-493.000.
Koch, Russell W.; and Barbin, William W., 4,434,832, Cl. 152-370.000.
Fischer, Artur. Fastening device. 4,434,597, Cl. 52-681.000.
Fischer, Peter: *See—*
Schwartz, Werner; and Fischer, Peter, 4,435,211, Cl. 75-62.000.
Fisher, John M., to B. F. Goodrich Company, The. Evacuation slide device. 4,434,870, Cl. 182-48.000.
Fitzgerald, Harry G., to Colgate-Palmolive Company. Disposable absorbent product having an embossed pad containing a gel forming compound. 4,435,178, Cl. 604-365.000.
Fitzky, Hans G.: *See—*
Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, 4,435,465, Cl. 428-195.000.
Flagg, Edward E., to Dow Chemical Company, The. Thiouronium phosphonates for use in dental treatments. 4,435,381, Cl. 424-54.000.
Flaherty, Thomas; and Price, Richard H., to John Kennedy (Civil Engineering) Limited. Pipework. 4,434,815, Cl. 138-97.000.
Flanders, Robert L.: *See—*
Bartholic, David B.; and Flanders, Robert L., 4,435,272, Cl. 208-127.000.
Flecker, Pierre: *See—*
Stenzel, Otto; and Flecker, Pierre, 4,435,818, Cl. 373-104.000.
Fletcher, Ian J., to Ciba-Geigy Corporation. Chromogenic quinazolines. 4,435,003, Cl. 282-27.500.
Florczyk, Rolf; and Krischik, Reinhold. Container having resealable opening means. 4,434,906, Cl. 220-268.000.
Flot, Regis; and Zoppi, Michel, to Raychem Pontoise S. A. Recoverable article. 4,435,454, Cl. 428-36.000.
Flowers, Allan L., to Nissan Design International, Inc. Multiple-position spare tire mount. 4,434,919, Cl. 224-42.210.
Fluckiger, Raymond W.: *See—*
Hulber, Loren J.; and Fluckiger, Raymond W., 4,435,464, Cl. 428-167.000.
FMC Corporation: *See—*
Christopher, Terry M.; and Nelson, Randolph J., 4,434,616, Cl. 60-451.000.
Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., 4,434,902, Cl. 212-268.000.
Foa', Marco: *See—*
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.
Focke & Co.: *See—*
Focke, Heinz H., 4,434,947, Cl. 242-57.100.
Focke, Heinz H., to Focke & Co. Axially displaceable reel holder for packing machine webs. 4,434,947, Cl. 242-57.100.
Fog, Jorgen L.; and Nielsen, Jorgen, to Disa A/S (Dansk Industri Syndifat A/S). Gun-mount for a machine gun supported by a fork or for a weapon of a similar kind with means for continuously variable adjustment of the elevation of the upper swivel arm. 4,434,703, Cl. 89-37.00B.
Foggini, Giovanni, to Lear S.n.c. di Foggini & C. Sun visors of the type having a cell structure particularly for automobile vehicles. 4,435,009, Cl. 296-97.00H.
Fonck, Klaus-Uwe: *See—*
Wilke, Heinz; and Fonck, Klaus-Uwe, 4,434,550, Cl. 29-837.000.
Fonds d'Etudes pour la Securite Routiere A.s.b.l.: *See—*
de Brabander, Louis F.; and Van Linthout, Luc K., 4,435,078, Cl. 356-121.000.
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, to Krone GmbH. Tool for electrically connecting insulated wires. 4,434,542, Cl. 29-566.400.
Ford Aerospace & Communications Corp.: *See—*
Luh, Howard H., 4,435,714, Cl. 343-753.000.
Ford Motor Company: *See—*
Basrai, Habil S., 4,434,857, Cl. 172-328.000.
Blechinger, Chester J., 4,434,656, Cl. 73-204.000.
Duffy, James J., 4,434,866, Cl. 180-143.000.
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,434,754, Cl. 123-146.50A.
Hetrick, Robert E., 4,435,742, Cl. 361-433.000.
Foresto, Samuel. Mass burning self-cleaning incinerator. 4,434,725, Cl. 110-346.000.
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, to Rhone-Poulenc Industries. Preparation of polyphenols by oxidation of hydroxybenzaldehydes. 4,435,601, Cl. 568-430.000.
Formica Corp.: *See—*
Hunt, James E. B., 4,435,234, Cl. 156-62.400.
Forry, John S.; and Garrick, John R., to Armstrong World Industries, Inc. Processes for forming building materials comprising non-woven webs. 4,435,353, Cl. 264-518.000.
Forsberg, John W., to Lubrizol Corporation, The. Carboxylic acid derivatives of alkanol tertiary monoamines. 4,435,297, Cl. 252-34.700.
Forshay, Steven E.: *See—*
Meyerhoff, Jerome D.; and Forshay, Steven E., 4,435,844, Cl. 455-218.000.
Forster, Gunther; and Gresser, German. Directing-barrier for a roadway. 4,435,106, Cl. 404-6.000.
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, to Bayer Aktiengesellschaft. Herbicidally active substituted phenoxycinnamic acid derivatives. 4,435,208, Cl. 71-105.000.
Forsythe, William L., Jr.: *See—*
Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,435,282, Cl. 208-113.000.
Foseco Trading A.G.: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.
Fossi, Paolo: *See—*
Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, 4,435,368, Cl. 423-40.000.
Foster Grant Corporation: *See—*
Phillips, Richard A.; and Haddad, Theodore A., 4,435,476, Cl. 428-412.000.
Fowles, Thomas A.: *See—*
D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., 4,434,904, Cl. 215-232.000.
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., to Ford Motor Company. Method of on site charging of distributor magnet. 4,434,754, Cl. 123-146.50A.
Franchise Mailing Systems: *See—*
Green, Ronald J., 4,435,246, Cl. 156-542.000.
Franck, Jean-Pierre: *See—*
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.
Frank, John, to A.I.M. Services. Celestial clock. 4,435,795, Cl. 368-16.000.
Franklin, Gordon S. Tree feller-buncher. 4,434,827, Cl. 144-336.000.

Franklin Steel Company: *See*—
Sweeney, Lawrence J., 4,435,107, Cl. 404-10.000.
Franz, John E., to Monsanto Company. N-Organo-phosphonomethylglycine-N-oxides and the use thereof to increase the sucrose content of sugarcane. 4,435,204, Cl. 71-86.000.
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, to Hoffmann-La Roche Inc. Quinyloxy-phenyloxy-oxime ester compounds having herbicidal activity. 4,435,207, Cl. 71-94.000.
Frazier, Alva W.; and Dillard, Ewell F., to Tennessee Valley Authority. Production of purified strong wet-process phosphoric acid. 4,435,372, Cl. 423-321.00R.
Frech, Kenneth J.; and Tazuma, James J., to Goodyear Tire & Rubber Company, The. Sulfur removal from a gas stream. 4,435,371, Cl. 423-228.000.
Freedman, George: *See*—
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.
Freiborg, Bennie. Asphalt composition hip and ridge cover. 4,434,589, Cl. 52-57.000.
French, William L., to Buckeye Molding Company. Container having integral opening means. 4,434,908, Cl. 220-276.000.
Frenznick, Anton: *See*—
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, to Robert Bosch GmbH. Apparatus for ascertaining a predetermined rotary position of a rotational body. 4,435,128, Cl. 417-63.000.
Friden, G. Burton. Infusion needle carrier. 4,435,175, Cl. 604-177.000.
Fried, Lawrence, to United States of America, Navy. Built-up mirror with reduced temperature gradient. 4,435,045, Cl. 350-310.000.
Friedrich, Ehrlinger; and Meyerle, Michael, to Zahnradfabrik Friedrichshafen AG. Hydromechanical drive. 4,434,681, Cl. 74-687.000.
Frohberger, Paul-Ernst: *See*—
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.
Froncisz, Wojciech; and Hyde, James S., to Medical College of Wisconsin. Microwave resonator structure. 4,435,680, Cl. 324-316.000.
Fueki, Shimetomo: *See*—
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.
Fuji Photo Film Co., Ltd.: *See*—
Arakawa, Shun, 4,435,248, Cl. 162-12.000.
Kitamura, Takashi; and Kokado, Hiroshi, 4,435,491, Cl. 430-49.000.
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, 4,435,503, Cl. 430-548.000.
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, 4,435,500, Cl. 430-419.000.
Sato, Masamichi, 4,435,069, Cl. 355-3.0FU.
Fuji Shashin Film Kabushiki Kaisha: *See*—
Katsuyama, Harumi; and Terashima, Masaaki, 4,435,362, Cl. 422-56.000.
Fuji Xerox Co., Ltd.: *See*—
Suzuki, Kazuhiro; and Takahashi, Toshikatsu, 4,435,077, Cl. 355-51.000.
Tan, Yoichi, 4,435,804, Cl. 370-69.100.
Fujii, Katsutoshi: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Fujikura, Chozo, to Furukawa Aluminum Co., Ltd. Aluminum alloy printing plate and method for manufacturing same. 4,435,230, Cl. 148-11.50A.
Fujimura, Hajime: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Fujino, Masahisa: *See*—
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.
Fujisawa, Fumio: *See*—
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.
Fujishima, Masakazu, to Nippon Gakki Seizo Kabushiki Kaisha. Adjacent station interference rejecting circuit. 4,435,618, Cl. 381-7.000.
Fujitsu Fanuc Limited: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,435,771, Cl. 364-474.000.
Fujitsu Limited: *See*—
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, 4,435,443, Cl. 427-38.000.
Ito, Takashi; and Nozaki, Takao, 4,435,447, Cl. 427-94.000.
Miwa, Hirohide; and Shimura, Takaki, 4,434,661, Cl. 73-625.000.
Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, 4,434,658, Cl. 73-618.000.
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.
Fujiwara, Takao: *See*—
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, 4,435,443, Cl. 427-38.000.
Fujiwara, Yoshihiro: *See*—
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, to Canon Kabushiki Kaisha. Electric motor drive device for camera. 4,435,061, Cl. 354-173.110.
Fukui, Akira: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, to Nippon Electric Co., Ltd. Lever actuator comprising a longitudinal-effect electroexpansive transducer and designed to prevent actuation from degrading the actuator. 4,435,666, Cl. 310-328.000.
Fukumura, Takumi: *See*—
Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, 4,435,006, Cl. 285-119.000.
Fukuoka, Tatsuhiko: *See*—
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,435,482, Cl. 428-553.000.
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, to Sumitomo Chemical Co., Ltd. Method for the orientation of thermoplastic polyether ether ketone films. 4,435,350, Cl. 264-280.000.
Fulcher, Royce G.: *See*—
Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, 4,435,429, Cl. 426-18.000.
Fulger, Charles V.; and Gum, Ernest K., to General Foods Corporation. Enzyme-saccharified all natural, ready-to-eat cereal from whole cereal grain. 4,435,430, Cl. 426-18.000.
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, to Sumitomo Chemical Company, Limited. Optical isomer of triazolylpentenols, and their production and use as fungicide, herbicide and/or plant growth regulant. 4,435,203, Cl. 71-76.000.
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, to Kabushiki Kaisha Morita Seisakusho. High voltage supply system for medical equipment. 4,435,747, Cl. 363-25.000.
Furukawa Aluminum Co., Ltd.: *See*—
Fujikura, Chozo, 4,435,230, Cl. 148-11.50A.
Furukawa Electric Company Ltd., The: *See*—
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, 4,435,212, Cl. 75-124.000.
Furukawa, Hisao: *See*—
Kato, Yasushi; and Furukawa, Hisao, 4,435,536, Cl. 524-378.000.
Furuta, Kenji, to Olympus Optical Co., Ltd. Magnetic recording-reproducing apparatus with constant length cue signal. 4,435,735, Cl. 360-74.400.
Furuya, Haruo: *See*—
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, to Taiho Kogyo Co., Ltd. Sliding member and process for producing the same. 4,435,482, Cl. 428-553.000.
Gabridge, Michael G. Tissue culture vessel. 4,435,508, Cl. 435-284.000.
GAF Corporation: *See*—
Liu, Kou-chang, 4,435,588, Cl. 500-21.000.
Gambino, Richard J.; and Ruf, Ralph R., to International Business Machines Corporation. Thermochemical magnetic generator. 4,435,663, Cl. 310-306.000.
Gandon, Louis: *See*—
Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, 4,435,368, Cl. 423-40.000.
Ganguly, Ashit K.; Mallams, Allan K.; and Liu, Yi-Tsung, to Schering Corporation. Tylosin 20-imino-20-deoxo-4''-acyl derivatives, pharmaceutical compositions and method of use. 4,435,388, Cl. 424-180.000.
Ganguly, Ashit K.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, to Robert Bosch GmbH. Two-part separable electrical connection arrangement. 4,435,033, Cl. 339-45.00M.
Gao Gesellschaft fur Automation and Organisation mbH: *See*—
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, 4,435,834, Cl. 382-7.000.
Gardano, Andrea: *See*—
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.
Gardner, David L.: *See*—
Burgess, Anthony J.; and Gardner, David L., 4,435,478, Cl. 428-463.000.
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., to READY Tools, Inc. Rotary bending and forming devices. 4,434,644, Cl. 72-387.000.
Garrett Corporation, The: *See*—
Boesel, Walter F., 4,435,664, Cl. 310-186.000.
Denk, Jpseph; and Martin, William B., 4,434,881, Cl. 192-89.00A.
Gu, Alston L.; and Silver, Alexander, 4,435,839, Cl. 384-103.000.
Garrett, William R., to Smith International, Inc. Drill string splined resilient tubular telescopic joint for balanced load drilling of deep holes. 4,434,863, Cl. 175-321.000.
Garrick, John R.: *See*—
Forry, John S.; and Garrick, John R., 4,435,353, Cl. 264-518.000.
Garstick, Larry A.: *See*—
Swanson, Glen E.; and Garstick, Larry A., 4,434,833, Cl. 152-417.000.

Gartner, Roderich: *See*—
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.

Gaspar, Michael E. Level indicator. 4,434,561, Cl. 33-366.000.

Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., to Motorola, Inc. Whip antenna construction. 4,435,713, Cl. 343-702.000.

Gaubert, Jean, to Les Cables de Lyon. Semiconductor packing composition for an undersea cable, a cable containing said substance and a method of manufacturing such a cable. 4,435,613, Cl. 174-102.0SC.

Gauger, Jurgen F.: *See*—
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., 4,435,313, Cl. 502-101.000.

Gaupp, Osvin: *See*—
Barth, Not-Duri; and Gaupp, Osvin, 4,435,627, Cl. 200-148.00R.

Gavella, Giulio: *See*—
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.

Gebruder Buhler AG: *See*—
Linzberger, Robert, 4,434,522, Cl. 15-256.510.

Gedeon Vegyeszeti Gyar Rt.: *See*—
Banos, Zoltan; Verecckey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Gehl, Paul O. Safety apparatus for cranes. 4,434,901, Cl. 212-153.000.

Gehring, Johann: *See*—
Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, 4,435,265, Cl. 204-198.000.

Geigle, William L.: *See*—
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 544-182.000.

Gelhaus, Ralph B. Clothes drying rack. 4,434,897, Cl. 211-1.300.

Gemar, Charles; and Meisch, Robert L., to Firestone Tire & Rubber Company, The. Dual spool pretensioner. 4,434,953, Cl. 242-107.000.

Gen-Tech, Inc.: *See*—
Tawse, Ian S., 4,435,662, Cl. 310-168.000.

General Director of the Agency of Industrial Science and Technology, Seiichi Ishizaka: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

General Electric Company: *See*—
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,434,700, Cl. 89-34.000.
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,435,679, Cl. 323-350.000.
Bovenkerk, Harold P., 4,435,189, Cl. 51-295.000.
Hershberger, Doran D., 4,434,546, Cl. 29-598.000.
Stahl, Charles R., 4,434,613, Cl. 60-39.070.
Tassie, Douglas P., 4,434,699, Cl. 89-12.000.
Tomson, James M., 4,434,545, Cl. 29-596.000.
Usry, Gerald O., 4,434,814, Cl. 138-44.000.

General Equipment Co.: *See*—
Von Ruden, Dennis, 4,434,969, Cl. 254-29.00R.

General Foods Corporation: *See*—
Fulger, Charles V.; and Gum, Ernest K., 4,435,430, Cl. 426-18.000.

General Motors Corporation: *See*—
Grammes, Gerhard, 4,434,758, Cl. 123-286.000.
Kaltwasser, Helmut, 4,434,998, Cl. 280-721.000.

General Signal Corporation: *See*—
Bowden, Charles J., 4,434,708, Cl. 91-436.000.

Geo Vann, Inc.: *See*—
Vann, Roy R.; Ribble, George W.; and George, R. Flint, 4,434,854, Cl. 166-386.000.

George, R. Flint: *See*—
Vann, Roy R.; Ribble, George W.; and George, R. Flint, 4,434,854, Cl. 166-386.000.

Gerber Garment Technology, Inc.: *See*—
LeBlond, Claude W., 4,434,691, Cl. 83-56.000.

Gerber, Jeremy. Camera with automatic aperture setting and partially color deleted viewfinder selection. 4,435,059, Cl. 354-453.000.

Gerber Scientific Instrument Company, The: *See*—
Berdat, Henry F.; and Baines, Kerry D., 4,435,055, Cl. 354-4.000.
Hevenor, Charles M.; and Wilson, David L., 4,435,674, Cl. 318-640.000.

Gergis, Isoris S.; and Lee, Wai-Tak P., to Rockwell International Corporation. Multi-replicator stretcher detector. 4,435,784, Cl. 365-8.000.

Gerhart, Fritz: *See*—
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.

Geria, Navin: *See*—
Shin, Chung T.; and Geria, Navin, 4,435,382, Cl. 424-66.000.

Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., to Procter & Gamble Company, The. Dishwashing liquid including alkyl sulfate, alkyl ether sulfate, alkylbenzene sulfonate and magnesium. 4,435,317, Cl. 252-547.000.

Gestioni Riunite Toscana Gomma S.p.A.: *See*—
Gilardi, Enrico, 4,435,014, Cl. 297-452.000.

Gg. Noell GmbH: *See*—
Krieger, Friedrich, 4,435,357, Cl. 376-272.000.
Krieger, Friedrich, 4,435,358, Cl. 376-272.000.

Giacomuzzo, Silvano: *See*—
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.

Gianetti, Franco: *See*—
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.

Gick, Wilhelm: *See*—
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.

Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, to Siemens Aktiengesellschaft. Circuit for a read-only memory organized in rows and columns to prevent bit line potentials from dropping. 4,435,789, Cl. 365-203.000.

Gilardi, Enrico, to Gestioni Riunite Toscana Gomma S.p.A. Elastic insert for seats, in particular for motor vehicle seats. 4,435,014, Cl. 297-452.000.

Gilchrist, Henry R., to Eckel Industries, Inc. Magnetic door hardware. 4,434,524, Cl. 16-250.000.

Gill, George; Souchier, Alain; and Dorville, Georges. Combustion chamber in a rocket propulsion system with multiple divergent portion. 4,434,614, Cl. 60-271.000.

Gilligan, Thomas J.: *See*—
Chow, Yiu T.; and Gilligan, Thomas J., 4,435,754, Cl. 364-200.000.

Gilmore, Brian J., to Goodyear Tire & Rubber Company, The. Method of breaking loose vulcanized hose from a rigid mandrel. 4,435,351, Cl. 264-335.000.

Gilmore, John F.: *See*—
Evans, George S.; Gilmore, John F.; and Morton, Edward W., 4,435,670, Cl. 315-58.000.

Gingerich, Benjamin L., to Harris Corporation. CMOS Address buffer for a semiconductor memory. 4,435,791, Cl. 365-230.000.

Ginn, Steven N., to CTS Corporation. Dual track resistor element having nonlinear output. 4,435,691, Cl. 338-125.000.

Giolitti, Nicolo, to Vigorelli Genova S.p.A. Motion conversion mechanism for effecting sewing machine feed dog control. 4,434,735, Cl. 112-220.000.

Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., to Schering Corporation. 5R,6S,8R-2-(1-Methyl-2-imidazolylmethylthio)-6-(1-hydroxyethyl)penem-3-carboxylic acid. 4,435,412, Cl. 424-270.000.

Gits Brothers Mfg. Co.: *See*—
Warner, Dale J., 4,434,986, Cl. 277-42.000.
Warner, Dale J., 4,434,988, Cl. 277-81.00R.

Givaudan Corporation: *See*—
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,435,585, Cl. 549-446.000.

Given, George R., Jr., to United States of America, Navy. Sprinkler valve. 4,434,855, Cl. 169-37.000.

Givens, James M. Dental floss holder. 4,434,806, Cl. 132-91.000.

GK Technologies, Incorporated: *See*—
Korbelak, Kenneth N., 4,434,554, Cl. 30-90.800.

Glass, John P. Syringe loader and method. 4,434,820, Cl. 141-2.000.

Glaverbel: *See*—
Mertens, Guy; and Laroche, Pierre, 4,435,043, Cl. 350-288.000.

Gleason, Anthony M.: *See*—
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,435,261, Cl. 204-168.000.

Gleason Works, The: *See*—
Hunkeler, Ernst J., 4,435,110, Cl. 409-11.000.

Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, to Licentia Patent-Verwaltungs-GmbH. Receiver for effecting synchronous demodulation. 4,435,773, Cl. 364-724.000.

Goetschel, Daniel B.: *See*—
Scott, Edward W.; and Goetschel, Daniel B., 4,435,807, Cl. 371-50.000.

Goetze AG: *See*—
Beyer, Horst; Lonne, Klaus; and Majewski, Klaus-Peter, 4,434,989, Cl. 277-235.00B.
Neuhauser, Hans J.; and Veutgen, Hans-Jurgen, 4,435,226, Cl. 148-3.000.

Goetzke, Siegfried: *See*—
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.

Gold, Inc.: *See*—
Welch, Marilyn L., 4,434,513, Cl. 2-410.000.

Goldberg, Edward M.; and Bazell, Seymour. Apparatus to be worn and method for removing fluid from a living subject. 4,435,171, Cl. 604-49.000.

Goldberger, William; and Reed, A. K., to Superior Graphite Co. Method of making ultra-microcrystallite silicon carbide product. 4,435,444, Cl. 427-49.000.

Goldstein, Bruce E.: *See*—
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.

Goldstein, Raymond: *See*—
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.

Gomory, Paul L., to Phillips Petroleum Company. Conversion of lignite to higher quality fuels. 4,435,269, Cl. 208-8.00R.

Gonzales, Gilbert R. Flexible helicopter rotor and pitch control mechanism. 4,434,956, Cl. 244-17.250.

Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., to FMC Corporation. Apparatus for extending and retracting a manual boom section. 4,434,902, Cl. 212-268.000.

Goode, Joseph W., III, to Emhart Industries, Inc. Automotive accessory control system. 4,435,648, Cl. 307-10.0OR.

Goodyear Aerospace Corporation: *See*—
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., 4,435,240, Cl. 156-242.000.

Goodyear Tire & Rubber Company, The: *See*—
Bell, Anthony J.; and Beyersdorff, Leland E., 4,435,554, Cl. 526-229.000.
Christie, William C., 4,434,652, Cl. 73-146.000.
Frech, Kenneth J.; and Tazuma, James J., 4,435,371, Cl. 423-228.000.
Gilmore, Brian J., 4,435,351, Cl. 264-335.000.
Grimm, Donald C., 4,435,535, Cl. 524-321.000.
Landers, Samuel P.; and Egan, William E., 4,434,830, Cl. 152-209.00R.
Olsen, Roy W.; and Bell, Curtis H., 4,435,352, Cl. 264-504.000.
Sturm, Budd H., 4,435,599, Cl. 564-433.000.
Sullivan, Carl M.; and Kelley, Mellis M., 4,435,562, Cl. 528-272.000.
Throckmorton, Morford C.; and Lal, Joginder, 4,435,553, Cl. 526-201.000.

Goransson, Sture: *See*—
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, 4,434,665, Cl. 73-724.000.

Gordon Barlow Design: *See*—
Barlow, Gordon A., 4,434,893, Cl. 206-522.000.

Goreнje Tovarna Gospodinjske Opreme N.Sol.O. Velenj: *See*—
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.

Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, to Hitachi Metals, Ltd. Process for depositing magnetic toner material on electrostatic latent images. 4,435,494, Cl. 430-122.000.

Goto, Tukasa: *See*—
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.

Gould Inc.: *See*—
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., 4,435,487, Cl. 429-70.000.

Gould, James S.: *See*—
Gould, Samuel; and Gould, James S., 4,435,696, Cl. 340-119.000.

Gould, Samuel; and Gould, James S., to Indicator Controls Corporation. Visor assembly for pedestrian traffic signal. 4,435,696, Cl. 340-119.000.

Gourlay, Alexander R., to International Business Machines Corporation. Method and apparatus for tomographical imaging. 4,435,838, Cl. 382-68.000.

Gourley, Robert N., to Eastman Kodak Company. Disperse azo dyes from 2-amino-3,5-bisfluorosulphonyl thiophene and aniline, tetrahydroquinoline, and benzomorpholine couplers. 4,435,320, Cl. 260-152.000.

Graalmann, Gerhard; and Niehues, Heiko, to Hauni-Werke Korber & Co. KG. Method and apparatus for drying tobacco. 4,434,563, Cl. 34-28.000.

Graber, Jay: *See*—
Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer, 4,434,718, Cl. 102-522.000.

Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., to Ortho Diagnostic Systems Inc. Particle washing system and method of use. 4,435,293, Cl. 210-772.000.

Graham, Tommy E., to Monsanto Company. Process for separating aggressive gases from gas mixtures. 4,435,191, Cl. 55-16.000.

Graiff, L. B.; and Kiovsky, T. E., to Shell Oil Company. Fuel and lubricant compositions for octane requirement reduction. 4,435,187, Cl. 44-63.000.

Grammes, Gerhard, to General Motors Corporation. Diesel engine. 4,434,758, Cl. 123-286.000.

Granetzke, Dennis C., to Modine Manufacturing Company. Valve controlled fuel heater with self-adjusting valve. 4,434,773, Cl. 123-557.000.

Grantland, Gary; and Boeckmann, Eduard F. B., to GTE Automatic Electric Inc. Latching relay hold circuit for a telephone instrument. 4,435,622, Cl. 179-81.00R.

Grass, Alfred. Door hinge for furniture doors or the like. 4,434,523, Cl. 16-242.000.

Gray, Lorin S., III; and Doody, Jeffrey S., to Scott Paper Company. Method of providing a surface effect in a release paper product. 4,435,461, Cl. 428-141.000.

Gray, Michael L., to Phillips Petroleum Company. Separation of nitrogen from natural gas. 4,435,198, Cl. 62-28.000.

Green, Philip S., to Siemens Corporation. Ultrasonic image generating apparatus. 4,434,662, Cl. 73-641.000.

Green, Ronald J., to Franchise Mailing Systems. Label dispensing and applying apparatus. 4,435,246, Cl. 156-542.000.

Green, William B.: *See*—
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.

Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, to Foseco Trading A.G. Protection of graphite electrodes. 4,435,510, Cl. 501-90.000.

Greenway, Michael J., to Beecham Group Limited. Injectable penicillin composition. 4,435,414, Cl. 424-271.000.

Greer, S. Thomas: *See*—
Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, 4,434,521, Cl. 15-230.110.

Gregory, Edward J., to IMI Marston Limited. Plate fin heat exchanger. 4,434,842, Cl. 165-133.000.

Greigger, Paul P., to PPG Industries, Inc. Stable inorganic coating composition for adherent, inorganic coatings. 4,435,219, Cl. 106-287.160.

Greisson, Bo L. Axial piston pump. 4,434,709, Cl. 91-506.000.

Gresser, German: *See*—
Forster, Gunther; and Gresser, German, 4,435,106, Cl. 404-6.000.

Gretsch-Unitas GmbH: *See*—
Maus, Julius, 4,434,678, Cl. 74-471.00R.

Griffin, Rowland A.: *See*—
Bahary, William S.; and Griffin, Rowland A., 4,435,488, Cl. 429-212.000.

Griffith, William F. Extended cascode amplifier. 4,435,686, Cl. 330-311.000.

Griggs, David T. Speech-controlled phonetic typewriter or display device using two-tier approach. 4,435,617, Cl. 381-44.000.

Grimm, Donald C., to Goodyear Tire & Rubber Company, The. Adipic acid as a scorch inhibitor for carboxylated rubbers. 4,435,535, Cl. 524-321.000.

Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Drive belt for snow vehicle and suspension therefor. 4,434,867, Cl. 180-190.000.

Grosbois, Jean: *See*—
Thomas, Maryvonne; and Grosbois, Jean, 4,435,308, Cl. 252-181.000.

Gross, James R., to Dow Chemical Company, The. Absorbent article having enhanced blood absorption. 4,435,172, Cl. 604-368.000.

Grotenhuis, Paulus A. M.: *See*—
Krijnen, Wilhelmus J.; and Grotenhuis, Paulus A. M., 4,435,582, Cl. 549-352.000.

Groult, Jacques, to Safet-Embamet Lethias. Sealing device and process for a metal pack. 4,434,910, Cl. 220-358.000.

Grow, Harry N.: *See*—
Zboralski, Jon A.; and Grow, Harry N., 4,434,711, Cl. 98-116.0LH.

Grubbs, Calvin E., to Thomas Industries Inc. High frequency inverter fault protection system. 4,435,749, Cl. 363-58.000.

Gruber, Walter, to Sulzer Brothers Ltd. Edge yarn clamp for a weaving machine. 4,434,817, Cl. 139-429.000.

Gruppo Lepetit S.p.A.: *See*—
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, 4,435,417, Cl. 424-273.00B.

Gschwendtner, Wolfgang W. J., to Exxon Research & Engineering Co. Isomerization of butene-1 to butene-2 in isobutylene. 4,435,609, Cl. 585-670.000.

GTE Automatic Electric Inc.: *See*—
Grantland, Gary; and Boeckmann, Eduard F. B., 4,435,622, Cl. 179-81.00R.
Weise, Volker B., 4,435,846, Cl. 455-253.000.

GTE Products Corporation: *See*—
Brower, Boyd G., 4,435,156, Cl. 431-359.000.
Mizuhara, Howard, 4,435,480, Cl. 428-548.000.

Gu, Alston L.; and Silver, Alexander, to Garrett Corporation, The. Foil bearing rubbing surface coating application methods. 4,435,839, Cl. 384-103.000.

Guerrero Q., Emilio C. Graphic display assembly for dynamic program presentation. 4,434,568, Cl. 40-518.000.

Guerret, Patrick G.: *See*—
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Guido, Heinz; and Wolfgarten, Hubert, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Electric furnace construction. 4,435,812, Cl. 373-72.000.

Guildford, Allen J.: *See*—
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.

Guillaume, Jacques: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,435,408, Cl. 424-263.000.

Gulf Canada Limited: *See*—
Wright, Brian D.; McBeth, Raymond A.; and Wessels, Egon, 4,434,741, Cl. 114-264.000.

Gulf Oil Corp.: *See*—
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.

Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, to Kamyr AB. Controlling operation of a centrifugal pump. 4,435,193, Cl. 55-21.000.

Gum, Ernest K.: *See*—
Fulger, Charles V.; and Gum, Ernest K., 4,435,430, Cl. 426-18.000.

Gunduz, Dincer H.: *See*—
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,435,063, Cl. 354-315.000.

Gunduz, Nurten N.; and Gunduz, Dincer H., to University of Pittsburgh. Autoradiography method using a slide rack. 4,435,063, Cl. 354-315.000.

Gurevich, Boris, to Raychem Corporation. Electrical devices with water-blocking insulation. 4,435,639, Cl. 219-544.000.

Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., to Johnson & Johnson Baby Products Company. Detergent compositions. 4,435,300, Cl. 252-117.000.

Guthmann, Alfred: *See*—
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Gutierrez, Richard: *See—*
Kay, Edward L.; and Gutierrez, Richard, 4,435,337, Cl. 528-493.000.

Guyton, David L. Ophthalmic test apparatus having magnification compensation. 4,435,052, Cl. 351-239.000.

Gymer, Geoffrey E.: *See—*
Richardson, Kenneth; and Gymer, Geoffrey E., 4,435,399, Cl. 424-250.000.

H. D. Baumann Assoc., Ltd.: *See—*
St. Martin, Leo E., Jr., 4,434,965, Cl. 251-121.000.

Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., to International Business Machines Corporation. Nested resource control using locking and unlocking routines with use counter for plural processes. 4,435,766, Cl. 364-300.000.

Hachiro, Nobuaki: *See—*
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,434,707, Cl. 91-376.00R.

Hadady Corp.: *See—*
Swander, Kenneth D., 4,434,877, Cl. 188-52.000.

Haddad, Theodore A.: *See—*
Phillips, Richard A.; and Haddad, Theodore A., 4,435,476, Cl. 428-412.000.

Haesloop, William G.; Mann, Melvin S.; and Jones, James W., to International Telephone & Telegraph Corporation. Submersible pumping system. 4,435,132, Cl. 417-360.000.

Hafner, V. Walter: *See—*
Morris, Earl L.; and Hafner, V. Walter, 4,434,516, Cl. 4-252.00R.

Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, to Japan Servo Co. DC Brushless motor and its driving control system. 4,435,673, Cl. 318-254.00A.

Hagiwara, Syuya: *See—*
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.

Haglid, Britt I., executrix: *See—*
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 344-182.000.

Haglid, Frank R., deceased: *See—*
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 344-182.000.

Haisma, Jan: *See—*
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, 4,435,200, Cl. 65-64.000.

Hajime Industries Ltd.: *See—*
Hajime, Yoshida, 4,435,641, Cl. 250-223.00B.

Hajime, Yoshida, to Hajime Industries Ltd. Inspection apparatus for inspecting an object to determine whether or not it contains an abnormality, defect or the like. 4,435,641, Cl. 250-223.00B.

Hajok, Dieter: *See—*
Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,434,935, Cl. 239-85.000.

Hakamata, Hitoshi, to Nissan Motor Company, Limited. Seat with a dual-adjustable armrest. 4,435,011, Cl. 297-113.000.

Haley, Charles B.: *See—*
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Haley, Robert D. Non-slip overshoe. 4,434,565, Cl. 36-7.300.

Hall, Floyd V., to Liggett Group Inc. Applicator for applying glue to a travelling stream of tipping paper. 4,434,805, Cl. 131-362.000.

Halliburton Company: *See—*
Surjaatmadja, Jim B., 4,434,704, Cl. 91-25.000.

Hallmark, Billy B.: *See—*
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.

Hallmark Cards, Inc.: *See—*
LeVeau, Robert, 4,434,567, Cl. 40-157.000.

Hamamatsu Corporation: *See—*
Schiller, Norman H.; and Alfano, Robert R., 4,435,727, Cl. 358-139.000.

Hamane, Tokuhito; and Tasai, Masaaki, to Matsushita Electric Industrial Co., Ltd. Winding apparatus. 4,434,945, Cl. 242-7.140.

Hamane, Tokuhito: *See—*
Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,434,819, Cl. 140-92.100.

Hamatsuki, Takeshige: *See—*
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, 4,435,666, Cl. 310-328.000.

Hambrecht, Juergen: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Hamilton Equipment Co., Inc.: *See—*
Matson, Carl G., 4,435,083, Cl. 366-114.000.

Hamilton Industries, Inc.: *See—*
Zboralski, Jon A.; and Grow, Harry N., 4,434,711, Cl. 98-116.01H.

Hammerton, Roderic H.: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Hampel, Heinrich: *See—*
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Hampton, James E., to SEDCO, Inc. Method of installing sub-sea templates. 4,435,108, Cl. 405-209.000.

Handler, Anthony. Holding-down and clamping device for shackle mechanisms. 4,434,534, Cl. 24-67.100.

Hanin, Elliott, to IRV Hanin. Rear view mirror assembly. 4,435,044, Cl. 350-302.000.

Hanna, Marie R.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,435,428, Cl. 426-3.000.

Hannula, Donald L.: *See—*
Redmond, Russell J.; and Hannula, Donald L., 4,435,174, Cl. 604-174.000.

Hansen, Gunnar L.: *See—*
Ohrberg, Carl V.; and Hansen, Gunnar L., 4,435,130, Cl. 417-310.000.

Hansen, Vagn A., to Warnaco of Canada Limited. Stayless shirt collar. 4,434,512, Cl. 2-129.000.

Hara, Junji: *See—*
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.

Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Air-conditioner control system for automobiles. 4,434,932, Cl. 236-49.000.

Hara, Syuji: *See—*
Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, 4,435,600, Cl. 564-464.000.

Harada, Hiroshi: *See—*
Ito, Satoaki; and Harada, Hiroshi, 4,435,821, Cl. 375-1.000.

Harkonen, Esko: *See—*
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Harman, Maurice, to Energy Equipment Company Limited, The. Heated chamber walls. 4,435,158, Cl. 432-58.000.

Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., to United Technologies Corporation. Predicted motion wind turbine tower damping. 4,435,647, Cl. 290-44.000.

Harris Corporation: *See—*
Davis, Robert C.; and Thaker, Gautam H., 4,435,823, Cl. 375-14.000.
Gingerich, Benjamin L., 4,435,791, Cl. 365-230.000.

Harris, James E., to Eastman Kodak Company. Pneumatic tow blooming process. 4,435,239, Cl. 156-180.000.

Harrison, Boyd L.; and Doherty, Niall S., to Merrell Dow Pharmaceuticals. Anti-inflammatory agents and antiasthmatic agents. 4,435,420, Cl. 424-277.000.

Harry, Ieuan L.: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., 4,435,244, Cl. 156-379.800.

Harsanyi, Kalman: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, to Bosch & Pierburg System OHG. Combustion mixture generator for internal combustion engines. 4,434,772, Cl. 123-549.000.

Hartline, Stephen D., to Norton Company. Chromia magnesia refractory. 4,435,514, Cl. 501-117.000.

Hartman, George D., to Merck & Co., Inc. Amino and alkylaminoalkenoate ester derivatives of aminochloronitropyrazine. 4,435,400, Cl. 424-250.000.

Hartmann & Braun AG: *See—*
Ilgner, Herwig; and Barth, Utz W., 4,435,849, Cl. 455-601.000.

Hartmann, Helmut, to Trefilarbed Drahtwerk Koln GmbH. Method and an apparatus for manufacturing strands from wires or ropes from strands. 4,434,608, Cl. 57-58.520.

Hartwell, George E.: *See—*
Butts, Susan B.; and Hartwell, George E., 4,435,605, Cl. 568-878.000.

Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, to Kleinewefers GmbH. Calender. 4,434,713, Cl. 100-168.000.

Harvey, William A.: *See—*
Torok, Ernest J.; and Harvey, William A., 4,435,041, Cl. 350-162.240.

Harwood, Leopold A.; and Shanley, Robert L., II, to RCA Corporation. Television receiver with selectively disabled on-screen character display system. 4,435,729, Cl. 358-183.000.

Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Pneumatic twisting spinning apparatus. 4,434,611, Cl. 57-328.000.

Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, to Honda Motor Co., Ltd. Air/fuel ratio feedback control system for internal combustion engines, having atmospheric pressure-dependent fail safe function for O_2 sensor. 4,434,764, Cl. 123-440.000.

Hasegawa, Shumpei: *See—*
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.

Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, to Japan Hydrazine Co., Inc. Process for preparation of tertiary butyl hydrazine. 4,435,600, Cl. 564-464.000.

Hashimoto, Shunichi: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Hashimoto, Takashi; and Yamazaki, Shigeyuki, to Hitachi, Ltd. Low Btu gas burner. 4,435,153, Cl. 431-208.000.

Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, to Hitachi, Ltd. Loop transmission system. 4,435,704, Cl. 340-825.010.

Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., to United States of America, Air Force. Self-supporting laser diffuser flow energizer. 4,435,810, Cl. 372-58.000.

Hata, Shun-ichi: *See*—
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Hatanaka, Hideo: *See*—
Saito, Motoyuki; and Hatanaka, Hideo, 4,435,796, Cl. 368-321.000.

Hattori, Tadashi: *See*—
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.

Hauni-Werke Korber & Co. KG: *See*—
Graalmann, Gerhard; and Niehues, Heiko, 4,434,563, Cl. 34-28.000.

Hausch, Walter R., to Firestone Tire & Rubber Company, The. Application of ambient temperature cured polymers or prepolymers to a cured elastomer. 4,435,456, Cl. 428-36.000.

Hauser, Max W., to Tektronix, Inc. Log-conformance error correction circuit for semiconductor devices. 4,435,655, Cl. 307-490.000.

Hauserman, Inc.: *See*—
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.

Haven, James T. Bar soap holder and dispenser. 4,435,030, Cl. 312-351.000.

Hawk, Johnna B.: *See*—
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,435,293, Cl. 210-772.000.

Hayashida, Haruo: *See*—
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, 4,435,350, Cl. 264-280.000.

Hayashida, Yoshihiro, to Tokico Ltd. Brake pressure control valve. 4,435,019, Cl. 303-6.00A.

Hayn, John W.: *See*—
Beliay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.

Haynes, Louie J.: *See*—
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., 4,434,946, Cl. 242-18.00G.

Haynes, Stewart, Jr.; and Mims, Donald S., to Texaco Inc. Method for steam injection in steeply dipping formations. 4,434,851, Cl. 166-272.000.

Haynes, Stewart, Jr.: *See*—
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., 4,434,852, Cl. 166-273.000.

Heath Manufacturing Company: *See*—
Rampley, Neil, 4,435,105, Cl. 403-109.000.

Heavy Oil Process, Inc.: *See*—
Allen, Joseph C., 4,434,849, Cl. 166-252.000.

Hebert, LeRoy: *See*—
Bourgeois, Dale M., 4,434,853, Cl. 166-285.000.

Heckmann, Walter: *See*—
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Hedberg, David J.; and Nilsson, C. Gary, to VAS Corporation. FM Video recording and reproducing system. 4,435,734, Cl. 358-335.000.

Hefele, Josef, to Kufner Textilwerke KG. Method and apparatus for reinforcing face fabric materials for garments. 4,435,442, Cl. 427-14.100.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Heat resistant resin composition. 4,435,530, Cl. 523-512.000.

Hegner, Gunter: *See*—
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Heimgartner, Roland: *See*—
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.

Heitkamp, Dieter; and Wagener, Klaus, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method and apparatus for concentration of trace material from large water volumes. 4,435,366, Cl. 423-6.000.

Hekatron GmbH: *See*—
Klett, Werner, 4,435,698, Cl. 340-512.000.

Heki, Hideaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Radioactive effluent gas monitoring apparatus. 4,435,644, Cl. 250-435.000.

Held, Kurt. Ring wedge joint for solid or laminated wood sections. 4,435,104, Cl. 403-332.000.

Helm, John L., Jr. Method of producing carbon monoxide and hydrogen by gasification of solid carbonaceous material involving microwave irradiation. 4,435,374, Cl. 423-415.00A.

Hemp, John; and Al-Khazraji, Yousif A. H., to National Research Development Corporation. Electromagnetic flowmeters and methods for measuring flow. 4,434,666, Cl. 73-861.120.

Henaff, Louis; Morel, Michel; and Favennec, Jean L. Installation for depositing thin layers in the reactive vapor phase. 4,434,742, Cl. 118-723.000.

Henderson, Gerald O.: *See*—
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.

Henkel Kommanditgesellschaft auf Atkien: *See*—
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,435,315, Cl. 252-522.00R.

Hennick, Robert P., to American Optical Corporation. Apparatus for testing lenses by determining best focus. 4,435,079, Cl. 356-123.000.

Hepner, Glen L. Extendible grill. 4,434,780, Cl. 126-9.00B.

Herfort, Hermann: *See*—
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Herman, Robert W., to New World Computer Company, Inc. Isolated multiple core magnetic transducer assembly. 4,435,736, Cl. 360-103.000.

Hernandez, Freda M.: *See*—
Hernandez, Ruben R.; and Hernandez, Freda M., 4,435,452, Cl. 428-17.000.

Hernandez, Ruben R.; and Hernandez, Freda M. Lil golden pine novelty display device. 4,435,452, Cl. 428-17.000.

Herrington, Kenneth M.; and Jeffries, Kenneth L., to International Business Machines Corporation. Separate stack areas for plural processes. 4,435,780, Cl. 364-900.000.

Herrmann, Ludwig: *See*—
Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, 4,434,566, Cl. 38-8.000.

Hershberger, Doran D., to General Electric Company. Method of making a core. 4,434,546, Cl. 29-598.000.

Hesse, Anton: *See*—
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Hetrick, Robert E., to Ford Motor Company. Electrochemical transistor structure with two spaced electrochemical cells. 4,435,742, Cl. 361-433.000.

Hettinger, William P., Jr.: *See*—
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Hevenor, Charles M.; and Wilson, David L., to Gerber Scientific Instrument Company, The. Method and apparatus for generating a verified plot. 4,435,674, Cl. 318-640.000.

Hewlett-Packard Company: *See*—
Marston, Alan D.; and Anne, Lenin, 4,435,446, Cl. 427-93.000.

Heynisch, Hinrich, to Siemens Aktiengesellschaft. Flat picture tube. 4,435,672, Cl. 315-366.000.

Heytmeijer, Herman R., to North American Philips Electric Corp. Recovery of mercury from scrap glass. 4,435,284, Cl. 209-3.000.

Hicks, James E.: *See*—
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., 4,435,731, Cl. 358-243.000.

Hildebrandt, Norbert: *See*—
Becker, Norbert; and Hildebrandt, Norbert, 4,435,103, Cl. 403-292.000.

Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., to Aluminum Company of America. Method for producing aluminum powder alloy products having improved strength properties. 4,435,213, Cl. 75-249.000.

Hill, Charles E., to Becton, Dickinson and Company. Laminate for wearing apparel and methods for the manufacture of the laminate. 4,435,458, Cl. 428-91.000.

Hill, Martin: *See*—
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, 4,435,745, Cl. 363-21.000.

Hills, Richard C.: *See*—
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., 4,435,487, Cl. 429-70.000.

Hilti Aktiengesellschaft: *See*—
Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, 4,434,859, Cl. 173-48.000.

Hinden, Jean M.: *See*—
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., 4,435,313, Cl. 502-101.000.

Hinnenkamp, James A., to National Distillers and Chemical Corporation. Process for the catalytic oxidation of propylene to acrylic acid. 4,435,598, Cl. 562-546.000.

Hino, Yasuhiko: *See*—
Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, 4,434,544, Cl. 29-578.000.

Hinsberg, Rene: *See*—
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Hiraishi, Shigetoshi: *See*—
Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, 4,435,471, Cl. 428-320.800.

Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, to Showa Denko Kabushiki Kaisha. Refining agent of molten metal and methods for producing the same. 4,435,210, Cl. 75-53.000.

Hirose, Yoshiharu: *See*—
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.

Hitachi Engineering Co., Ltd.: *See*—
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Hitachi, Ltd.: *See*—
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.
Hashimoto, Takashi; and Yamazaki, Shigeyuki, 4,435,153, Cl. 431-208.000.
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Koide, Kazuo, 4,435,654, Cl. 307-455.000.
Matsui, Yasuo, 4,435,826, Cl. 375-115.000.
Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, 4,435,151, Cl. 431-90.000.
Niiyama, Eisuke; and Kodama, Hideyo, 4,434,836, Cl. 164-429.000.
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.
Sakow, Hiroshi; and Kashioka, Seiji, 4,435,835, Cl. 382-8.000.
Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, 4,435,688, Cl. 331-99.000.
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.
Tomooka, Keiji, 4,435,825, Cl. 375-113.000.

Hitachi Metals, Ltd.: *See*—
Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, 4,435,494, Cl. 430-122.000.

Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., to Texas Instruments Incorporated. Radio telephone with position transmission capability. 4,435,711, Cl. 343-389.000.

Hobart Brothers Company: *See*—
Risberg, Robert L., 4,435,632, Cl. 219-130.510.

Hobart Corporation: *See*—
Scharsig, Hans-Hermann, 4,434,694, Cl. 83-411.00R.

Hodges, Michael J., to Detexomat Machinery Limited. Boarding apparatus and method. 4,434,918, Cl. 223-75.000.

Hodshire, Vincent B. Fishing apparatus. 4,434,573, Cl. 43-15.000.

Hoelzinger, Walther J., to Boise Cascade Corporation. Method for forming multi-flute-layer corrugated board. 4,435,237, Cl. 156-157.000.

Hoenick, Hermann H., to Lucas Industries Limited. Vehicle brake actuator and braking system. 4,435,021, Cl. 303-10.000.

Hoerner, Griffith L.: *See*—
Brandsen, Donald H.; and Hoerner, Griffith L., 4,434,922, Cl. 224-314.000.

Hoffmann-La Roche Inc.: *See*—
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, 4,435,207, Cl. 71-94.000.
Krasso, Anna; and Ramuz, Henri, 4,435,406, Cl. 424-263.000.

Hofmeister, Helmut: *See*—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.

Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, to Mobay Chemical Corporation; and Bayer Aktiengesellschaft. Concentrated flowable storage stable aqueous formulations of cold dyeing fiber reactive dyestuffs. 4,435,181, Cl. 8-527.000.

Hok, Bertil: *See*—
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, 4,434,665, Cl. 73-724.000.

Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., to Pennzoil Company. Preparation of monocalcium phosphate and/or phosphoric acid from phosphate rock. 4,435,370, Cl. 423-158.000.

Holland-Letz, Gunter, to Esselte Pendaflex Corporation. Apparatus for imprinting and dispensing pressure-sensitive labels adhering to a carrier tape. 4,435,245, Cl. 156-384.000.

Holm, Poul: *See*—
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, 4,435,307, Cl. 252-174.120.

Holmberg Electronics Corporation: *See*—
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.

Holt, Harley R., to Allied Corporation. Conductor termination apparatus. 4,434,551, Cl. 29-861.000.

Holtkamp, Bernd: *See*—
Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., 4,435,685, Cl. 330-261.000.

Holtkamp, Reinhold. Capillary disc and support therefor. 4,434,577, Cl. 47-81.000.

Honda Giken Kabushiki Kaisha: *See*—
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ikenoya, Yasuo; and Ishida, Yoichi, 4,434,615, Cl. 60-293.000.
Okubo, Kiyokazu, 4,434,878, Cl. 192-48.920.
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.

Honda, Masamitsu: *See*—
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, 4,434,764, Cl. 123-440.000.
Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, 4,434,769, Cl. 123-493.000.

Honda, Takeo: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Honeywell, Inc.: *See*—
Stevens, Emsley H., 4,435,652, Cl. 307-297.000.

Honkawa, Yoshinori: *See*—
Ishii, Koji; and Honkawa, Yoshinori, 4,434,716, Cl. 101-142.000.

Hoover Company, The: *See*—
Tschudy, Donald B.; and Morrow, Charles R., 4,434,865, Cl. 180-19.00H.

Hoover Universal, Inc.: *See*—
Myers, William H.; and Dundas, Dennis L., 4,435,147, Cl. 425-577.000.

Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, to BASF Aktiengesellschaft. Stable injectable β-carotene micellar solutions and their preparation. 4,435,427, Cl. 424-356.000.

Horey, Leonard I.: *See*—
Salge, Edward A.; and Horey, Leonard I., 4,434,732, Cl. 112-158.00E.

Hori, Mikio: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, to Hitachi, Ltd. Vibration/noise reduction device for electrical apparatus. 4,435,751, Cl. 364-574.000.

Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Company Limited. Process for preparing microcapsules for pressure sensitive manifold paper. 4,435,340, Cl. 264-4.700.

Horikawa, Yoshiaki; and Imai, Toshihiro, to Olympus Optical Co., Ltd. Telephoto lens system. 4,435,049, Cl. 350-454.000.

Horike, Masanori; and Ebi, Yutaka, to Ricoh Company, Ltd. Deflection control type ink jet printing apparatus. 4,435,720, Cl. 346-75.000.

Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, to Nissan Motor Company, Limited. Window structure of a vehicle body. 4,434,593, Cl. 52-208.000.

Horiuchi, Tomofusa, to Nissan Motor Company, Limited. Vaporizer for a liquefied petroleum gas engine. 4,434,774, Cl. 123-557.000.

Horizon Chemical, Inc.: *See*—
Kenny, Thomas C.; and Plunkett, John P., 4,435,185, Cl. 44-68.000.

Horlander, Frank J., to International Business Machines Corporation. Thermal printer edge compensation. 4,435,634, Cl. 219-216.000.

Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, to BASF Aktiengesellschaft. Storage stable dispersions of aromatic polyesters in polyhydroxyl compounds and their preparation. 4,435,537, Cl. 524-391.000.

Hornyak, Gyula: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Horton Manufacturing Co., Inc.: *See*—
Raines, Charles D., 4,434,883, Cl. 192-110.00R.

Horton, Paul L., to Excelermatic Inc. Traction roller transmission with mechanical transmission ratio control. 4,434,676, Cl. 74-200.000.

Horvath, Kalman: *See*—
Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., 4,435,177, Cl. 604-263.000.

Horvath, Vincent V.: *See*—
Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,435,093, Cl. 374-129.000.

Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, to Nihon Early Kabushiki Kaisha. Plate positioning apparatus. 4,434,693, Cl. 83-71.000.

Hosono, Nagao: *See*—
Adachi, Hiroyuki; and Hosono, Nagao, 4,435,072, Cl. 355-3.0FU.

Hotchkiss-Brandt Sogeme H.B.S.: *See*—
Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, 4,434,888, Cl. 198-466.000.

Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., to Tate & Lyle Limited. Sweeteners. 4,435,440, Cl. 426-658.000.

House, Marshall K., to Cascade Corporation. Lift truck paper roll clamp having automatically adjustable roll of different diameters. 4,435,117, Cl. 414-620.000.

House, Marshall K., to Cascade Corporation. Lift truck load clamp having power-actuated pivotal subframe for handling paper rolls. 4,435,119, Cl. 414-620.000.

House, Roy F., to Venture Innovations, Inc. Concentrated hydrophilic polymer suspensions. 4,435,217, Cl. 106-171.000.

House, Roy F., to Venture Innovations, Inc. Method of liquifying waxy materials. 4,435,309, Cl. 252-314.000.

House, Roy F., to Venture Innovations, Inc. Compositions and processes for using hydroxyethyl cellulose in heavy brines. 4,435,564, Cl. 536-87.000.

Howa Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Takeo, 4,434,990, Cl. 279-4.000.

Howard, James M.: *See*—
Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., 4,435,810, Cl. 372-58.000.

Howeth, D. Franklin. Dust conveying and collecting system and method. 4,434,861, Cl. 175-66.000.

Hoye, Thomas M. Universal pivoting and folding beverage holder apparatus. 4,434,961, Cl. 248-311.200.

Hsieh, Der-Chang; and LaBudde, Edward V., to Burroughs Corporation. Optical memory system having track following and seeking capabilities. 4,435,797, Cl. 369-32.000.

Hsieh, John C.; and Wu, Wei-Wha, to International Business Machines Corporation. Testing of logic arrays. 4,435,805, Cl. 371-25.000.
Hsieh, John T. T.: *See*—
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., 4,435,518, Cl. 502-107.000.
Hsu, Jau Y., to Societe d'Assistance Technique pour Produits Nestle S.A. Rice pasta composition. 4,435,435, Cl. 426-557.000.
Huang, I-der: *See*—
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,435,521, Cl. 502-209.000.
Huber, Kurt: *See*—
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.
Huckabee, Bill F.; and Wright, William L., to International Business Machines Corporation. Electric circuit packaging member. 4,435,740, Cl. 361-398.000.
Hudon, Paul. Self-closing cylindrical gate for hydraulic turbo-machine. 4,434,964, Cl. 251-62.000.
Hudspith, Sydney, to American Hospital Supply Corporation. Liquid transfer device. 4,434,823, Cl. 141-329.000.
Huey Company: *See*—
Shelton, Huey G.; and Zack, Leonard N., 4,434,721, Cl. 108-4.000.
Hughes Aircraft Company: *See*—
Ajioka, James S.; and Joe, Dick M., 4,435,715, Cl. 343-771.000.
Hughes, John Rhys: *See*—
Beach-Thomas, Anthony W., 4,434,992, Cl. 280-47.13B.
Hughes, Thomas R.: *See*—
Buss, Waldeen C.; and Hughes, Thomas R., 4,435,283, Cl. 208-138.000.
Hughes Tool Company: *See*—
Witten, Raymond L., 4,435,661, Cl. 310-90.000.
Hulber, Loren J.; and Fluckiger, Raymond W., to Jostens, Inc. Hinge for thermoplastic material. 4,435,464, Cl. 428-167.000.
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., to Sundstrand Data Control, Inc. Borehole orientation detection system employing polarized radiation. 4,434,654, Cl. 73-151.000.
Humboldt Products Corp.: *See*—
Darnell, W. Dale, 4,434,791, Cl. 128-20.000.
Hunkeler, Ernst J., to Gleason Works, The. Drive train for gear hobbing machine. 4,435,110, Cl. 409-11.000.
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., to Data General Corporation. Apparatus and method for simultaneous display of characters of variable size and density. 4,435,703, Cl. 340-723.000.
Hunt, James E. B., to Formica Corp. Method of producing high pressure decorative laminates containing an air-laid web. 4,435,234, Cl. 156-62.400.
Hunt, James W.; and Johnson, Raymond A., to UMC Industries, Inc. Cash box for paper currency. 4,434,931, Cl. 232-15.000.
Hunt, Mack W.: *See*—
Brannen, Cecil G.; and Hunt, Mack W., 4,435,301, Cl. 252-33.200.
Huntington Alloys, Inc.: *See*—
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,435,359, Cl. 419-3.000.
Hurnik, Helmut: *See*—
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.
Huskey, Joseph E. Dental flossing aid. 4,434,807, Cl. 132-92.00R.
Huth, Andreas: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Huzino, Seizi: *See*—
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Hyatt, Gilbert P. Electro-optical illumination control system. 4,435,732, Cl. 358-254.000.
Hyde, James S.: *See*—
Froncisz, Wojciech; and Hyde, James S., 4,435,680, Cl. 324-316.000.
Hydro Quebec: *See*—
Drouet, Michel G.; and Nadeau, Francois, 4,435,631, Cl. 219-124.020.
Iaccino, Alex: *See*—
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.
Ichiyanagi, Toshikazu: *See*—
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.
Iezuka, Isamu; and Nakano, Kazuo, to Toyota Jidosha Kabushiki Kaisha. Fuel supply cut control device of an internal combustion engine. 4,434,759, Cl. 123-325.000.
Iguchi, Takao: *See*—
Tagawa, Kenichi; and Iguchi, Takao, 4,435,024, Cl. 308-217.000.
Iioka, Akira, to Nihon Dixie Company, Limited. Method for producing a heat-insulating paper container from a paper coated or laminated with a thermoplastic synthetic resin film. 4,435,344, Cl. 264-45.100.
Ikado, Shuhei: *See*—
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.
Ikai, Shigeru: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.
Ikeda Bussan Co., Ltd.: *See*—
Arihara, Takumi, 4,435,013, Cl. 297-364.000.
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, to Tokico Ltd. Arm for a programme controlled manipulator. 4,435,120, Cl. 414-735.000.
Ikeda, Toshiaki: *See*—
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, 4,435,747, Cl. 363-25.000.
Ikeda, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Washer-dehydrator. 4,434,630, Cl. 68-18.00F.
Ikenoya, Yasuo; and Ishida, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning device of internal combustion engines. 4,434,615, Cl. 60-293.000.
Ikezaki, Eiji: *See*—
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.
Ilgner, Herwig; and Barth, Utz W., to Hartmann & Braun AG. Optical transmission system. 4,435,849, Cl. 455-601.000.
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, to Fujitsu Limited. Method for forming a protecting film on side walls of a semiconductor device. 4,435,443, Cl. 427-38.000.
Imai, Tamotsu, to UOP Inc. Dehydrogenation of dehydrogenatable hydrocarbons. 4,435,607, Cl. 585-443.000.
Imai, Toshihiro: *See*—
Horikawa, Yoshiaki; and Imai, Toshihiro, 4,435,049, Cl. 350-454.000.
Imai, Youg, to Olympus Optical Company Limited. Capacitively coupled rotational speed detector. 4,435,702, Cl. 340-671.000.
IMI Marston Limited: *See*—
Gregory, Edward J., 4,434,842, Cl. 165-133.000.
Imperial Chemical Industries PLC: *See*—
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Burgess, Anthony J.; and Gardner, David L., 4,435,478, Cl. 428-463.000.
Imperial Group Limited: *See*—
Bolt, Anthony J. N.; and Chard, Brian C., 4,434,804, Cl. 131-309.000.
Inae, Shoji; and Okamoto, Harunori, to Mitsuboshi Belting Ltd. Method of manufacturing a foldable bicycle tire having flexible beads. 4,435,236, Cl. 156-132.000.
Inagaki, Mitsuo; and Sasaya, Hideaki, to Nippon Soken, Inc. Compressor having rotor rotating without contracting side plates. 4,435,140, Cl. 418-259.000.
Incerti Baldi, Andrea: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.
Indicator Controls Corporation: *See*—
Gould, Samuel; and Gould, James S., 4,435,696, Cl. 340-119.000.
Industrial Parts Depot: *See*—
Rasmussen, Robert, 4,434,642, Cl. 72-356.000.
Industrie Zanussi S.p.A.: *See*—
Bianchi, Giuseppe; and Sburlino, Roberto, 4,434,629, Cl. 68-13.00A.
Ingemann, Ole, to A/S Haustrup Plastic. Container having an originally sealed condition which can be opened and thereafter closed. 4,434,907, Cl. 220-276.000.
Ingersoll-Rand Company: *See*—
Luthi, Oscar; and Carlsmith, Lawrence A., 4,435,085, Cl. 366-155.000.
Ingram, Larry S.: *See*—
Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., 4,434,655, Cl. 73-167.000.
Inokuchi, Hiroo: *See*—
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.
Inoue, Hiroshi: *See*—
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, 4,435,513, Cl. 501-96.000.
Inoue, Tokuji: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.
Inoue, Yoshio: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.
Inowa, Shigeru: *See*—
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.
Institut Francais du Petrole: *See*—
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.
Institute of Gas Technology: *See*—
Vorres, Karl S., 4,435,364, Cl. 422-145.000.
International Business Machines Corporation: *See*—
Basi, Jagtar S.; and Mendel, Eric, 4,435,247, Cl. 156-636.000.
Baum, Richard I.; and Sakalay, Frederick E., 4,435,759, Cl. 364-200.000.
Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., 4,435,778, Cl. 364-900.000.
Gambino, Richard J.; and Ruf, Ralph R., 4,435,663, Cl. 310-306.000.
Gourlay, Alexander R., 4,435,838, Cl. 382-68.000.

Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., 4,435,766, Cl. 364-300.000.
Herrington, Kenneth M.; and Jeffries, Kenneth L., 4,435,780, Cl. 364-900.000.
Horlander, Frank J., 4,435,634, Cl. 219-216.000.
Hsieh, John C.; and Wu, Wei-Wha, 4,435,805, Cl. 371-25.000.
Huckabee, Bill F.; and Wright, William L., 4,435,740, Cl. 361-398.000.
Kaufman, Dan R.; and Thompson, Gerhard R., 4,435,782, Cl. 364-716.000.
Lorie, Raymond A.; and Strong, Hovey R., Jr., 4,435,758, Cl. 364-200.000.
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,435,777, Cl. 364-900.000.
Meritt, Allan S., 4,435,755, Cl. 364-200.000.
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,435,762, Cl. 364-200.000.
Rizzi, John R., 4,435,753, Cl. 364-200.000.

International Computers Limited: *See*—
Stevens, Reginald W., 4,435,705, Cl. 340-825.050.

International Environmental Manufacturing Co.: *See*—
Alford, Arthur L., 4,434,843, Cl. 165-150.000.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,435,428, Cl. 426-3.000.
Licciardello, Michael; and Boden, Richard M., 4,435,331, Cl. 260-463.000.
Sprecker, Mark A., 4,435,316, Cl. 252-522.00R.

International Jensen Incorporated: *See*—
Thakkar, Narendra C., 4,435,833, Cl. 381-109.000.

International Paper Company: *See*—
Paoli, Bruno, 4,434,926, Cl. 226-172.000.

International Telephone and Telegraph Corporation: *See*—
Bowen, James H.; Baldwin, David L.; and Couch, Philip R., 4,435,850, Cl. 455-606.000.
Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., 4,435,803, Cl. 370-16.000.
Haesloop, William G.; Mann, Melvin S.; and Jones, James W., 4,435,132, Cl. 417-360.000.
Smith, John C., 4,435,238, Cl. 156-171.000.
Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., 4,434,837, Cl. 164-468.000.

Ionics, Incorporated: *See*—
Pabst, Patrea L.; and Bing, David H., 4,435,318, Cl. 260-112.00B.

Irie, Michiyuki: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.

Iruya, Seiichi: *See*—
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.

IRV Hanin: *See*—
Hanin, Elliott, 4,435,044, Cl. 350-302.000.

Irving, Edward, to Ciba-Geigy Corporation. Carboxyl-containing compositions and their polymerization. 4,435,497, Cl. 430-288.000.

Isaac, Otto: *See*—
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.

Ise, Yukihiko: *See*—
Yamashita, Ichiro; and Ise, Yukihiko, 4,434,671, Cl. 73-862.480.

Ishida, Masahide: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,435,767, Cl. 364-405.000.

Ishida, Yoichi: *See*—
Ikenoya, Yasuo; and Ishida, Yoichi, 4,434,615, Cl. 60-293.000.

Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, to Kabushiki Kaisha Yamamoto Suistsu Kogyosho. Automatic pressurized connecting device. 4,435,006, Cl. 285-119.000.

Ishiguri, Yukio: *See*—
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.

Ishii, Koji; and Honkawa, Yoshinori, to Ryobi Ltd. Operating lever device for printing machine. 4,434,716, Cl. 101-142.000.

Ishii, Susumu: *See*—
Nagata, Kazuo; and Ishii, Susumu, 4,434,923, Cl. 225-97.000.

Ishikawa, Soji. Needle assembly. 4,435,176, Cl. 604-190.000.

Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Condensation system for power plant. 4,434,620, Cl. 60-657.000.

Ishimaru, Kimio; and Abe, Kenichi, to Osaka Gas Co., Ltd. Combination heating apparatus. 4,435,629, Cl. 219-10.55A.

Itakura, Hideo: *See*—
Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, 4,434,646, Cl. 72-451.000.

Italtel Societa Italiana Telecomunicazioni S.p.A.: *See*—
Bonaparte, Ennio; and Mosca, Virgilio, 4,435,619, Cl. 179-17.00R.

Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, to Sanwa Kako Company, Limited. Method of producing open-cell foamed articles of cross-linked polyolefins. 4,435,346, Cl. 264-54.000.

Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, to Nippondenso Co., Ltd.; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for producing cordierite ceramic products. 4,435,512, Cl. 501-32.000.

Ito, Masahiro: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Ito, Satoski; and Harada, Hiroshi, to Nippon Electric Co., Ltd. Receiver in a frequency hopping communication system. 4,435,821, Cl. 375-1.000.

Ito, Takao: *See*—
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.

Ito, Takashi; and Nozaki, Takao, to Fujitsu Limited. Method for forming an insulating film on a semiconductor substrate surface. 4,435,447, Cl. 427-94.000.

Itoh, Hiroshi: *See*—
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,434,760, Cl. 123-339.000.

Iuchi, Tohru, to Nippon Steel Corporation. Surface temperature measuring apparatus for object within furnace. 4,435,092, Cl. 374-129.000.

Ivanova, Tatyana L.: *See*—
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.

Iwahashi, Haruo: *See*—
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Iwane, Yoshitaka: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Iwasa, Yoshio: *See*—
Morita, Hideo; and Iwasa, Yoshio, 4,434,778, Cl. 123-587.000.

Iwasaki, Nobuyuki: *See*—
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, 4,435,500, Cl. 430-419.000.

Iwashita, Tomonori: *See*—
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.

Iwata, Minoru: *See*—
Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, 4,434,766, Cl. 123-472.000.

Iwata, Noriyuki: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Izumi, Kazuo: *See*—
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.

J. E. Johnson & Sons (Engineers) Limited: *See*—
Johnson, James E., 4,435,165, Cl. 441-130.000.

Jaccard, Pierre-Ernest, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Static pick-up for timepiece. 4,435,090, Cl. 368-320.000.

Jackson, Dale; and McManus, John R., to Carrier Corporation. Variably spaced wrapped fin heat exchanger. 4,434,841, Cl. 165-125.000.

Jackson, David E.; and Mannuzza, Frank J., to Miles Laboratories, Inc. Isolation of superoxide dismutase. 4,435,506, Cl. 435-189.000.

Jacobs, Erwin: *See*—
Schwabe, Ulrich; and Jacobs, Erwin, 4,434,543, Cl. 29-576.00B.

Jacobs, Joseph M. Strip solder feeding and re-winding device. 4,434,925, Cl. 226-127.000.

Jacquin, Yves: *See*—
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.

Jagenberg Werke AG: *See*—
Wohlfeil, Gerhard, 4,434,941, Cl. 239-587.000.

Jakob, Claus P.: *See*—
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.

Jakob, Gert: *See*—
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.

Jamiolkowski, Dennis D.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,435,590, Cl. 560-61.000.

Jan-Held, Wilhelm: *See*—
Lindorfer, Walter; and Jan-Held, Wilhelm, 4,435,290, Cl. 210-708.000.

Japan Audatex Co., Ltd.: *See*—
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.

Japan Hydrazine Co., Inc.: *See*—
Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, 4,435,600, Cl. 564-464.000.

Japan Servo Co.: *See*—
Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, 4,435,673, Cl. 318-254.00A.

Jastram-Werke GmbH & Co. KG: *See*—
Barkemeyer, Wolfgang K. W., 4,434,738, Cl. 114-162.000.

Jastram-Werke GmbH KG: *See*—
Brix, Joachim; and Weiss, Friedrich, 4,434,739, Cl. 114-162.000.

Jaunich, Helmut: *See*—
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Javan, Ali. Production of radiation at frequencies of preselected absorbing resonances and methods using same. 4,435,808, Cl. 372-11.000.

Jeandin, Michel: *See*—
Trottier, Jean-Pierre; and Jeandin, Michel, 4,435,360, Cl. 419-49.000.
Jeanty, Philippe, to Laboratoires Biotrol S.A. Device for foetal blood sampling in utero. 4,434,803, Cl. 128-770.000.
Jeffries, Kenneth L.: *See*—
Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., 4,435,766, Cl. 364-300.000.
Herrington, Kenneth M.; and Jeffries, Kenneth L., 4,435,780, Cl. 364-900.000.
Jenkines, Randall C.: *See*—
McKinney, Linda D.; and Jenkines, Randall C., 4,435,459, Cl. 428-95.000.
Jenn-Air Corporation: *See*—
Simon, Donald J.; and Field, Thomas R., 4,435,638, Cl. 219-460.000.
Jenner, Michael R.: *See*—
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.
Jensen, Georg W.: *See*—
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, 4,435,307, Cl. 252-174.120.
Jensen, Ronald W., to Oscar Mayer Foods Corporation. Sausage diameter monitoring apparatus and method. 4,434,529, Cl. 17-49.000.
Jiminez, Oscar; and Bianco, Frank J., to Biotechnology, Inc. Apparatus for testing physical condition of a self-propelled vehicle rider. 4,434,801, Cl. 128-689.000.
Joe, Dick M.: *See*—
Ajioka, James S.; and Joe, Dick M., 4,435,715, Cl. 343-771.000.
Johansson, Lars O., to Studsvik Energiteknik AB. Method and an apparatus for monitoring the period of a nuclear reactor. 4,435,356, Cl. 376-216.000.
Johansson, Thomas, to Kemanord AB. Process for the preparation of silicon or ferrosilicon. 4,435,209, Cl. 75-11.000.
John Kennedy (Civil Engineering) Limited: *See*—
Flaherty, Thomas; and Price, Richard H., 4,434,815, Cl. 138-97.000.
Johnson, Alfred D. Method of preparing a two-way shape memory alloy. 4,435,229, Cl. 148-11.50R.
Johnson, Howard B. Rotary vane machine with rotating end sealing plates. 4,435,138, Cl. 418-131.000.
Johnson, James E., to J. E. Johnson & Sons (Engineers) Limited. Flotation device for supporting a person in water. 4,435,165, Cl. 441-130.000.
Johnson & Johnson Baby Products Company: *See*—
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., 4,435,300, Cl. 252-117.000.
Johnson, Matthey & Co., Limited: *See*—
Knapton, Arthur G.; and Selman, Gordon L., 4,435,373, Cl. 423-403.000.
Johnson, Michael R. Modular stacking trays. 4,435,026, Cl. 312-45.000.
Johnson, Raymond A.: *See*—
Hunt, James W.; and Johnson, Raymond A., 4,434,931, Cl. 232-15.000.
Johnson Service Company: *See*—
Siler, Dan R.; and Trimble, Harold D., 4,435,829, Cl. 378-60.000.
Johnson, Timothy W.: *See*—
Reed, Jerry O.; and Johnson, Timothy W., 4,435,222, Cl. 134-2.000.
Johnson, Walter R., to Combustion Engineering, Inc. Electrical insulating refractory composition. 4,435,693, Cl. 338-238.000.
Johnston, Samuel J. B., to EMI Limited. Electroplating arrangements. 4,435,266, Cl. 204-276.000.
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, to Roussel Uclaf. 1α,25α-Dihydroxy-cholecalciferol and methods for the production thereof. 4,435,325, Cl. 260-397.200.
Jones, Brian C., to Combustion Engineering, Inc. Fine particulate feed system for fluidized bed furnace. 4,434,726, Cl. 110-347.000.
Jones, Glenn C.; and Culver, Larry J., to Eastman Kodak Company. Coalescent-containing coating composition. 4,435,534, Cl. 524-292.000.
Jones, Howard: *See*—
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,435,395, Cl. 424-248.500.
Jones, James B.; and Soyka, Ron B., to Jones, James B. Hot tub thermometer. 4,435,095, Cl. 374-194.000.
Jones, James W.: *See*—
Haesloop, William G.; Mann, Melvin S.; and Jones, James W., 4,435,132, Cl. 417-360.000.
Jones, Richard E.: *See*—
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, to U.S. Philips Corporation. Method of preparing precision pressed glass object. 4,435,200, Cl. 65-64.000.
Jordan, Ernst G., to Obo Bettermann OHG, Firma. Stud welding apparatus. 4,435,630, Cl. 219-98.000.
Joseph, Eric D.; and Davies, Robert B., to Motorola, Inc. Low voltage precision current source. 4,435,678, Cl. 323-273.000.
Jostens, Inc.: *See*—
Hulber, Loren J.; and Fluckiger, Raymond W., 4,435,464, Cl. 428-167.000.
Jubanowsky, Louis J. Viscosity increasing additive for non-aqueous fluid systems. 4,435,218, Cl. 106-266.000.
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, to Institut Francais du Petrole. Process for manufacturing gasoline with upgrading of hydrocarbon oils. 4,435,274, Cl. 208-80.000.
Junck, Guy, to Arbed S. A. Gammanetric thickness measuring apparatus. 4,435,643, Cl. 250-358.100.
Jung, Michel: *See*—
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.
Jung, Rudolf H.: *See*—
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.
Junker, Erwin. Apparatus for cutting saw teeth into saw blades or saw bands. 4,434,685, Cl. 76-38.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, 4,435,747, Cl. 363-25.000.
Kabushiki Kaisha Sumimoto Kagaku Kenkyusho: *See*—
Sumimoto, Morio, 4,435,287, Cl. 210-131.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Chihara, Hiroyuki; and Kitano, Masuo, 4,435,089, Cl. 368-204.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, 4,434,611, Cl. 57-328.000.
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.
Kabushiki Kaisha Yakult Honsha: *See*—
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.
Kabushiki Kaisha Yamamoto Suiatsu Kogyosho: *See*—
Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, 4,435,006, Cl. 285-119.000.
Kaczerginski, Alexandre; and Willem, Michel, to Societe Anonyme dite: CERAVER. Sealed end cap mounting for laminated insulator core. 4,435,615, Cl. 174-189.000.
Kadija, Igor V., to Olin Corporation. Method for producing a reticulate electrode for electrolytic cells. 4,435,252, Cl. 204-11.000.
Kaffenberger, Orville A., Jr.: *See*—
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.
Kai, Yoshiyuki: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.
Kaitoh, Mitsumasa: *See*—
Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, 4,435,251, Cl. 203-50.000.
Kakuta, Atsushi: *See*—
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.
Kakuta, Yoshiyuki: *See*—
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Kalab, Zdenek: *See*—
Svercl, Josef; Novak, Jan; and Kalab, Zdenek, 4,434,645, Cl. 72-402.000.
Kalfa, Horst: *See*—
Buhler, Hans-Eugen; and Kalfa, Horst, 4,435,157, Cl. 432-30.000.
Kaltwasser, Helmut, to General Motors Corporation. Rear axle for vehicles especially motor vehicles. 4,434,998, Cl. 280-721.000.
Kalz, Dietmar: *See*—
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.
Kamens, Ernest R., to Pennwalt Corporation. Reaction of carbonylhydrazines and organic peroxides to foam unsaturated polyester resins. 4,435,525, Cl. 521-92.000.
Kamigaito, Osami: *See*—
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.
Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, to Asahi Glass Company Ltd. Electro-optical device and electro-optical light controlling device. 4,435,048, Cl. 350-357.000.
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. Azetidinone 4-disulfides. 4,435,321, Cl. 260-239.00A.
Kamoshita, Katsuzo: *See*—
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.
Kamyr AB: *See*—
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.
Kanazawa, Tatsuo; and Suyama, Tsuneo, to Kubota, Ltd. Holding device for nested pipes. 4,434,892, Cl. 206-446.000.
Kane, John M.: *See*—
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,435,571, Cl. 544-384.000.
Kanebo, Ltd.: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.
Kanebo Synthetic Fibers Ltd.: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Kato, Yasushi; and Furukawa, Hisao, 4,435,536, Cl. 524-378.000.

Kaneko, Shinji: *See*—
Sugiyama, Minoru; and Kaneko, Shinji, 4,435,101, Cl. 403-122.000.
Kaneuchi, Tetsuro: *See*—
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Kanoi, Minoru: *See*—
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.
Kansai Paint Co., Ltd.: *See*—
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.
Kanzaki Paper Manufacturing Company Limited: *See*—
Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, 4,435,340, Cl. 264-4.700.
Kapitanov, Nikolai N.: *See*—
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.
Karam, Emmanuel E.: *See*—
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki. Surgical staple, a method of and forceps for its removal. 4,434,796, Cl. 128-335.000.
Karlson, Eskil: *See*—
Schmitt, Oscar A.; Nedreski, Robert J.; and Karlson, Eskil, 4,435,163, Cl. 434-263.000.
Karner, Francisco A.: *See*—
Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., 4,435,778, Cl. 364-900.000.
Karr, Gerald W., to Beloit Corporation. Winder rider roll control. 4,434,949, Cl. 242-66.000.
Kasanami, Takeo: *See*—
Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, 4,435,346, Cl. 264-54.000.
Kashioka, Seiji: *See*—
Sakow, Hiroshi; and Kashioka, Seiji, 4,435,835, Cl. 382-8.000.
Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,435,012, Cl. 297-355.000.
Kassai, Kenzou, to Kassai Kabushikikaisha. Seat assembly for baby carriages. 4,435,012, Cl. 297-355.000.
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M. 2,6-Dimethyl-3,5-dicarbomethoxy-4-(ortho-di-fluoromethylthiophenyl)-1,4-dihydropyridine. 4,435,574, Cl. 546-321.000.
Katayama, Masayoshi: *See*—
Shinoda, Kazuichi; and Katayama, Masayoshi, 4,434,668, Cl. 73-861.220.
Kato, Hideaki, to Konishiroku Photo Industry Co., Ltd. Electrophotographic recording apparatus. 4,435,722, Cl. 346-153.100.
Kato, Yasushi; and Furukawa, Hisao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. One-pack composition. 4,435,536, Cl. 524-378.000.
Kato, Yoshiaki, to Citizen Watch Company Limited. Liquid crystal display device for world time wristwatch. 4,435,086, Cl. 368-22.000.
Kato, Yuichi: *See*—
Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, 4,434,766, Cl. 123-472.000.
Katsma, William L.: *See*—
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.
Katsuyama, Harumi; and Terashima, Masaaki, to Fuji Shashin Film Kabushiki Kaisha. Integral multilayer analytical element for the assay of total protein. 4,435,362, Cl. 422-56.000.
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., to Diamond Shamrock Corporation. Electrode with outer coating for effecting an electrolytic process and protective intermediate coating on a conductive base, and method of making same. 4,435,313, Cl. 502-101.000.
Kaufhold, Horst T.: *See*—
Mulcahy, Harry W.; and Kaufhold, Horst T., 4,434,720, Cl. 105-199.0CB.
Kaufman, Benjamin J.: *See*—
Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., 4,435,186, Cl. 44-53.000.
Kaufman, Dan R.; and Thompson, Gerhard R., to International Business Machines Corp. Data processing system with high density arithmetic and logic unit. 4,435,782, Cl. 364-716.000.
Kawabata, Susumu: *See*—
Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, 4,434,611, Cl. 57-328.000.
Kawachi, Tsuneo: *See*—
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.
Kawai, Hisasi: *See*—
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Kawai, Yasunari: *See*—
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, 4,434,755, Cl. 123-195.00C.
Kawamura, Hiroji: *See*—
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, 4,435,802, Cl. 369-286.000.
Kawamura, Nobuhisa: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.
Kawashima, Hideo: *See*—
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.
Kay, Edward L.; and Gutierrez, Richard, to Firestone Tire & Rubber Company, The. Process for extracting rubber and by-products from guayule and guayule-like shrubs. 4,435,337, Cl. 528-493.000.
Kaya, Azmi: *See*—
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Kaye, Peter D., to Bell Industries, Inc. Saw-advancing means with edge engaging pad. 4,434,683, Cl. 76-37.000.
Kaylo, Alan J.; and Castellucci, Nicholas T., to PPG Industries, Inc. Tannin-epoxy reaction products and compositions thereof. 4,435,529, Cl. 523-426.000.
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle with closeable engine intake and exhaust passages. 4,434,755, Cl. 123-195.00C.
KBI Corp.: *See*—
Kirk, James L.; and Ohneck, Robert J., 4,435,292, Cl. 210-747.000.
Keener, Neil F. Hammer with magazine nail feed. 4,434,929, Cl. 227-115.000.
Kehr, Wolfgang: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Keita, Kawamura: *See*—
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, 4,435,260, Cl. 204-164.000.
Kelley, Mellis M.: *See*—
Sullivan, Carl M.; and Kelley, Mellis M., 4,435,562, Cl. 528-272.000.
Kelly, Arnold J.: *See*—
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,435,261, Cl. 204-168.000.
Kemanord AB: *See*—
Johansson, Thomas, 4,435,209, Cl. 75-11.000.
Kemper, Kate. Apparatus for shaping dough. 4,435,144, Cl. 425-332.000.
Kennecott Corp.: *See*—
TenEyck, John D., 4,435,468, Cl. 428-285.000.
Kennedy, A. Terence, to Damon Corporation. Centrifuge rotor apparatus with sling arms. 4,435,168, Cl. 494-20.000.
Kenneth E. Beswick Limited: *See*—
Beswick, David G. E., 4,434,548, Cl. 29-623.000.
Kenney, George C., II: *See*—
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., 4,435,687, Cl. 331-23.000.
Kenny, Thomas C.; and Plunkett, John P., to Horizon Chemical, Inc. Furnace fuel. 4,435,185, Cl. 44-68.000.
Kerey, Gyorgy: *See*—
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Heitkamp, Dieter; and Wagener, Klaus, 4,435,366, Cl. 423-6.000.
Kerr-McGee Chemical Corporation: *See*—
Morris, Alan J., 4,435,365, Cl. 423-76.000.
Kettle, John L., to Otis Elevator Company. Spiral escalator. 4,434,884, Cl. 198-328.000.
Keyes, Marion A.: *See*—
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Khalafalla, Sanaa E.: *See*—
Reimers, George W.; and Khalafalla, Sanaa E., 4,435,302, Cl. 252-62.510.
Khalifa, Ramzl A.: *See*—
Prather, Joseph E.; Khalifa, Ramzl A.; and Wenzler, Peter B., 4,435,027, Cl. 312-222.000.
Khan, Riaz A.: *See*—
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.
Kida, Masahiko: *See*—
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Kijima, Shizumasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.
Kilian, Ernst A.: *See*—
Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., 4,435,685, Cl. 330-261.000.
Kilpatrick, Paul J.: *See*—
Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., 4,435,766, Cl. 364-300.000.

Kimble, James B.: *See*—
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., 4,435,304, Cl. 252-156.000.

Kimoto, Manabu, to Nippon Electric Co., Ltd. Data processing apparatus capable of transferring serial data with small power consumption. 4,435,761, Cl. 364-200.000.

Kiovsky, T. E.: *See*—
Graiff, L. B.; and Kiovsky, T. E., 4,435,187, Cl. 44-63.000.

Kipp, Ronald W., to RCA Corporation. Radar ranging system for use with sloping target. 4,435,709, Cl. 343-14.000.

Kipp, Ronald W., to RCA Corporation. FM-CW Radar ranging system with signal drift compensation. 4,435,712, Cl. 343-17.700.

Kirayoglu, Erol M.: *See*—
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.

Kirk, Donald C., Jr., to Ethyl Products Company. Child-resistant finger pump dispenser. 4,434,915, Cl. 222-153.000.

Kirk, James L.; and Ohneck, Robert J., to KBI Corp. Portable method for decontaminating earth. 4,435,292, Cl. 210-747.000.

Kirschner, Thomas F., to RCA Corporation. Disc record player having shutoff switch actuating apparatus. 4,435,799, Cl. 369-77.200.

Kish, Richard D.: *See*—
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.

Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, to Mitsubishi Rayon Co., Ltd. Novel polymer composition. 4,435,540, Cl. 524-780.000.

Kitagawa, Norihisa; and Asahi, Hiroji, to Texas Instruments Incorporated. Nonvolatile semiconductor memory device. 4,435,788, Cl. 365-185.000.

Kitajima, Tadayuki, to Canon Kabushiki Kaisha. Variable magnification copying apparatus. 4,435,070, Cl. 355-8.000.

Kitamura, Shigeyoshi: *See*—
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Kitamura, Takashi; and Kokado, Hiroshi, to Fuji Photo Film Co., Ltd. Electrophotographic process for the production of lithographic printing plates and light-sensitive materials for use therein. 4,435,491, Cl. 430-49.000.

Kitano, Masuo: *See*—
Chihara, Hiroyuki; and Kitano, Masuo, 4,435,089, Cl. 368-204.000.

Kiya, Nobuyuki: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,435,771, Cl. 364-474.000.

Klauber, Gerald: *See*—
Petito, Ferdinand C.; and Klauber, Gerald, 4,435,668, Cl. 313-388.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Schneider, Wolfgang, 4,435,126, Cl. 416-186.00R.

Kleinewefers GmbH: *See*—
Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, 4,434,713, Cl. 100-168.000.

Kleinschmit, Peter: *See*—
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.

Klett, Werner, to Hekatron GmbH. Circuit arrangement for the transmission of measurements to a central, especially in a fire alarm system. 4,435,698, Cl. 340-512.000.

Kley, Victor B. Graphical data entry apparatus. 4,435,616, Cl. 178-18.000.

Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., to RCA Corporation. Television receiver disabling circuit. 4,435,731, Cl. 358-243.000.

Klockner-Humboldt-Deutz AG: *See*—
Kupper, Heinz; and Busch, Helmut, 4,434,940, Cl. 239-397.500.
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, 4,434,934, Cl. 237-12.30R.

Kloster, Kenneth D. Vise. 4,434,978, Cl. 269-69.000.

Klupsch, Hans J., to EVOG - Etablissement fur Verwaltung und Organisation. Process for the production of stable curdled milk products. 4,435,432, Cl. 426-43.000.

Knapton, Arthur G.; and Selman, Gordon L., to Johnson, Matthey & Co., Limited. Fibre packs for ammonia oxidation. 4,435,373, Cl. 423-403.000.

Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., to Goodyear Aerospace Corporation. Fabric-reinforced, flexible-walled container and method of making said container. 4,435,240, Cl. 156-242.000.

Kness, Werner, to U.S. Philips Corporation. Dry-shaving apparatus having a trimmer. 4,434,553, Cl. 30-34.100.

Knickerbocker, Michael G., to Seaquist Valve Company. Pump assembly with improved seal. 4,435,135, Cl. 417-511.000.

Knudsen, Hans B., to F. L. Smidth & Co. Apparatus for thermally treating pulverous materials such as cement raw material. 4,435,159, Cl. 432-106.000.

Knudsen, Niels K. Heat accumulator. 4,434,785, Cl. 126-400.000.

Koal, Inc.: *See*—
Kovacs, Geza L., 4,435,306, Cl. 252-173.000.

Kobayashi, Hideyuki, to Aisen Seiki Kabushiki Kaisha. Brake master cylinder assembly. 4,434,619, Cl. 60-547.100.

Kobayashi, Hisao: *See*—
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.

Kobayashi, Masatsune: *See*—
Eida, Tsuyoshi; and Kobayashi, Masatsune, 4,435,717, Cl. 346-1.100.

Kobayashi, Nobuyuki; and Itoh, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the idling speed of an engine. 4,434,760, Cl. 123-339.000.

Kobayashi, Takashi: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Kobayashi, Takeo, to Howa Kogyo Kabushiki Kaisha. Fluid-actuated hollow power chuck. 4,434,990, Cl. 279-4.000.

Kobayashi, Takumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic film wind-up camera. 4,435,060, Cl. 354-173.100.

Kobler, Ingo; and Mische, Hans-Jurgen, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printed goods removal apparatus. 4,434,979, Cl. 271-307.000.

Koch, Russell W.; and Barbin, William W., to Firestone Tire & Rubber Company, The. Room temperature curable tire patch. 4,434,832, Cl. 152-370.000.

Kodama, Hideyo: *See*—
Niiyama, Eisuke; and Kodama, Hideyo, 4,434,836, Cl. 164-429.000.

Koetsier, Wicher T.; and Verduijn, Johannes P., to Exxon Research & Engineering Co. Xylene isomerization. 4,435,608, Cl. 585-480.000.

Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, to Nippon Soken, Inc. Output control system for multicylinder internal combustion engine. 4,434,767, Cl. 123-481.000.

Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, to Ebara Corporation. Method and apparatus for desulfurization and denitrification of waste gas by multi-stage electron beam irradiation. 4,435,260, Cl. 204-164.000.

Koide, Kazuo, to Hitachi, Ltd. Output level adjustment means for low fanout ECL lacking emitter follower output. 4,435,654, Cl. 307-455.000.

Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, to Chugai Seiyaku Kabushiki Kaisha. Plant growth regulator. 4,435,202, Cl. 71-76.000.

Koizumi, Masuo: *See*—
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Kojima, Junichiroh; and Mizoe, Kenji, to Nippon Electric Co., Ltd. Radio mobile communication system wherein probability of loss of calls is reduced without a surplus of base station equipment. 4,435,840, Cl. 455-33.000.

Kojima, Kenji: *See*—
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, 4,435,074, Cl. 355-15.000.

Kojima, Mikio: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Kojima, Yasufumi: *See*—
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.

Kokado, Hiroshi: *See*—
Kitamura, Takashi; and Kokado, Hiroshi, 4,435,491, Cl. 430-49.000.

Kolm, Eric A.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,435,667, Cl. 310-367.000.

Kolm, Henry H.; and Kolm, Eric A., to Peizo Electric Products, Inc. Spiral piezoelectric rotary actuator. 4,435,667, Cl. 310-367.000.

Kolomayets, George: *See*—
Dennis, James T.; and Kolomayets, George, 4,435,800, Cl. 369-225.000.

Kolomeitsev, Alexandr A.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Komatsu, Osamu: *See*—
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.

Komatsuzawa, Toshiki: *See*—
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.

Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sintered bodies of aluminum nitride. 4,435,513, Cl. 501-96.000.

Konaka, Daijiro: *See*—
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.

Kondo, Takehisa: *See*—
Shirase, Haruya; and Kondo, Takehisa, 4,434,776, Cl. 123-568.000.

Kondratenko, Natalya V.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Kong, Ah S.: *See*—
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kato, Hideaki, 4,435,722, Cl. 346-153.100.

Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Koppers Company Inc.: *See*—
Lindgren, Carl, 4,435,250, Cl. 202-239.000.

Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer. Sabot and projectile. 4,434,718, Cl. 102-522.000.

Korbelak, Kenneth N., to GK Technologies, Incorporated. Optical fiber stripping device. 4,434,554, Cl. 30-90.800.

Korenko, Michael K., to United States of America, Energy. Cold worked ferritic alloys and components. 4,435,231, Cl. 148-12.0EA.

Kornatowski, Boleslaw, to Singer Company, The. Handwheel clutch for sewing machines. 4,434,880, Cl. 192-67.00R.

Korolkov, Ivan A.: *See*—
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.

Kos, Joseph M.: *See*—
Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., 4,435,647, Cl. 290-44.000.

Kosaka, Tsutomu: *See*—
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Koshelev, Jury I.: *See*—
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Kosova, Lyana I.: *See*—
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Kostan, Charles C.: *See*—
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,434,754, Cl. 123-146.50A.

Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I. Composition for the preparation of carbonaceous base use in the manufacture of siliconized antifriction materials. 4,435,538, Cl. 524-492.000.

Kotake, Eiichi: *See*—
Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, 4,435,673, Cl. 318-254.00A.

Koto, Katsumi: *See*—
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Kotzur, Joachim: *See*—
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.

Kovach, Stephen M.: *See*—
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Kovacs, Geza L., to Koal, Inc. Stable coal-water suspensions and their preparation. 4,435,306, Cl. 252-173.000.

Koziol, Walter. Thermally efficient barbecue grill. 4,434,781, Cl. 126-25.00R.

Krabbe, Wilfried: *See*—
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, 4,434,591, Cl. 52-73.000.

Kragh, Loren G., to Tower Systems, Inc. Falling film heat exchanger. 4,435,339, Cl. 261-153.000.

Krainov, Sergei V.: *See*—
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.

Kranzle, Josef; and Droitsch, Lutz. Apparatus with latching effect for limiting pressure in liquid feeding systems. 4,435,127, Cl. 417-26.000.

Krasso, Anna; and Ramuz, Henri, to Hoffmann-La Roche Inc. Imidazole derivatives. 4,435,406, Cl. 424-263.000.

Kraus, Charles E., to Excelermatic Inc. Transmission ratio control arrangement for a precess cam controlled infinitely variable traction roller transmission. 4,434,675, Cl. 74-200.000.

Krause, Gunter: *See*—
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, 4,435,834, Cl. 382-7.000.

Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., to Bethlehem Steel Corporation. Pyrometer with sighting window cleanliness monitor. 4,435,093, Cl. 374-129.000.

Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, to VEB Kombinat Textima. Laundry mangle with roll covering reel. 4,434,566, Cl. 38-8.000.

Kray, Louis R.: *See*—
Ferm, Richard L.; and Kray, Louis R., 4,435,273, Cl. 208-48.0AA.

Kresky, Fred C.: *See*—
Boland, John D.; and Kresky, Fred C., 4,434,970, Cl. 254-108.000.

Krieger, Friedrich, to Gg. Noell GmbH. Support for used fuel rods in nuclear installations. 4,435,357, Cl. 376-272.000.

Krieger, Friedrich, to Gg. Noell GmbH. Means for fixation of spent nuclear elements. 4,435,358, Cl. 376-272.000.

Krijnen, Wilhelmus J.; and Grotenhuis, Paulus A. M., to Shell Oil Company. Manufacture of macrocyclic polyethers. 4,435,582, Cl. 549-352.000.

Krischik, Reinhold: *See*—
Florczyk, Rolf; and Krischik, Reinhold, 4,434,906, Cl. 220-268.000.

Krishnakumar, Suppayan M.: *See*—
Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., 4,435,244, Cl. 156-379.800.

Krogsrud, Harald, to Elkem a/s. Contact assembly. 4,435,817, Cl. 373-103.000.

Krone GmbH: *See*—
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Krone, Hartmut: *See*—
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Kruger, H. Eckard: *See*—
Timm, Horst; and Kruger, H. Eckard, 4,435,845, Cl. 455-228.000.

Kruse, Walter M.; and Stephen, John F. Etherification process for hexitols and anhydrohexitols. 4,435,586, Cl. 549-464.000.

Kubisiak, Helmut: *See*—
Berthold, Fritz; and Kubisiak, Helmut, 4,435,509, Cl. 436-518.000.

Kubota, Ltd.: *See*—
Kanazawa, Tatsuo; and Suyama, Tsuneo, 4,434,892, Cl. 206-446.000.

Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, to Matsushita Electric Industrial Co., Ltd. Coil forming machine. 4,434,819, Cl. 140-92.100.

Kuehnle, Manfred R. Method and means for reducing frame effect in electrographic images on microfiche. 4,435,071, Cl. 355-10.000.

Kufner Textilwerke KG: *See*—
Hefele, Josef, 4,435,442, Cl. 427-14.100.

Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.

Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., to Cutter Laboratories, Inc. Needle assembly. 4,435,177, Cl. 604-263.000.

Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, to Dynamit Nobel Aktiengesellschaft. Multi-layered sealing sheet of elastomeric synthetic resin. 4,435,466, Cl. 428-215.000.

Kuhner, Gerhard: *See*—
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.

Kuin, Nicolaas P. J.: *See*—
Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., 4,435,067, Cl. 355-3.0TR.

Kuiper, Krijn: *See*—
Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, 4,435,806, Cl. 371-25.000.

Kujala, Jaakko: *See*—
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Kuli, John C., Jr.: *See*—
Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., 4,435,213, Cl. 75-249.000.

Kumar, Pullatikurthi P., to University of Nebraska, The Board of Regents of the. Apparatus for treating carcinoma of the uterine cervix. 4,434,789, Cl. 128-1.200.

Kunkel, Robert C., Jr., to Combustion Engineering, Inc. Overbed distributor for feeding dual solid fuels to a stoker furnace. 4,434,724, Cl. 110-269.000.

Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Running position indicator apparatus. 4,435,760, Cl. 364-444.000.

Kunou, Yasuo: *See*—
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.

Kupper, Heinz; and Busch, Helmut, to Klockner-Humboldt-Deutz AG. Insulated fuel injection nozzle device and method for manufacturing same. 4,434,940, Cl. 239-397.500.

Kurata, Keiji: *See*—
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.

Kurihara, Shuichi: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Kurita Machinery Manufacturing Company Limited: *See*—
Miyano, Muneyuki, 4,435,288, Cl. 210-227.000.

Kuroda, Akio: *See*—
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Kuroda, Takio: *See*—
Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, 4,435,340, Cl. 264-4.700.

Kuroda, Tsukasa: *See*—
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Kurtz, George W.; and Bankston, Ben F., to United States of America, National Aeronautics and Space Administration. Two-dimensional scanner apparatus. 4,434,659, Cl. 73-620.000.

Kuwana, Noriaki: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Kuze, Yoshikazu. Read clock pulse controller. 4,435,827, Cl. 377-44.000.
Kyriakos, Constantinos S., to Bendix Corporation, The. Means for eliminating step error in FM/CW radio altimeters. 4,435,708, Cl. 343-12.00A.
La Calhene: *See—*
Picard, Claude; and Saint Martin, Bernard, 4,435,194, Cl. 55-96.000.
Labelle, Henri M. R., to Martinray Industries Ltd. Hinge having open curved portions. 4,434,525, Cl. 16-355.000.
Laboratoires Biotrol S.A.: *See—*
Jeanty, Philippe, 4,434,803, Cl. 128-770.000.
Laboratorium Prof. Dr. Rudolf Berthold: *See—*
Berthold, Fritz; and Kubisiak, Helmut, 4,435,509, Cl. 436-518.000.
LaBudde, Edward V.: *See—*
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LaCount, Kenneth H., to Cooper Industries, Inc. Pneutmatic hoist brake and control. 4,434,974, Cl. 254-360.000.
Lacour, Alain P.: *See—*
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Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., to Allied Corporation. Temperature stable thermotropic poly(ester carbonate) containing high amounts of readily available diols. 4,435,561, Cl. 528-193.000.
Lal, Joginder: *See—*
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Lama, William L.; and Rees, James D., to Xerox Corporation. Method and apparatus for improving image quality of a reduction/enlargement gradient index lens array. 4,435,039, Cl. 350-96.250.
LaMattina, John L.; and Lipinski, Christopher A., to Pfizer Inc. Anti-ulcer 2-guanidino-4-(2-substituted-amino-4-imidazolyl)thiazoles and process therefor. 4,435,396, Cl. 424-248.510.
Lamberti, Vincent; and Pease, Wilder F., to Lever Brothers Company. Preparation and use of alkali metal isethionates from ethionic acid. 4,435,328, Cl. 260-400.000.
Lancaster, Janet M.: *See—*
Atkinson, Alan W.; and Lancaster, Janet M., 4,435,235, Cl. 156-62.200.
Lanciault, Joseph A. Adjustable solar heat collector. 4,434,786, Cl. 126-424.000.
Landa, Benzion, to Savin Corporation. Apparatus for electrophotography. 4,435,068, Cl. 355-3.00R.
Landers, Samuel P.; and Egan, William E., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,434,830, Cl. 152-209.00R.
Lang, Richard D.: *See—*
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Langlois, Michel: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.
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Larson, Charles L., deceased; and by Larson, Rocket L., executor. Accumulator for veneer feeder. 4,434,912, Cl. 221-227.000.
Larson, Rocket L., executor: *See—*
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Laszczower, Max, to Solco Basel AG. Assembly for receiving and discharging a collection of blood. 4,435,170, Cl. 604-4.000.
Lau, Philip T. S., to Eastman Kodak Company. Release of photographic reagents with 3-pyrazolidone developing agents. 4,435,495, Cl. 430-218.000.
Lau, Philip Y., to Dow Chemical Company, The. Backfill for magnesium galvanic anodes. 4,435,263, Cl. 204-197.000.
Lau, Philip Y., to Dow Chemical Company, The. Magnesium anode backfills. 4,435,264, Cl. 204-197.000.
Lauer, Gerhard; Morawiez, Alfred; and Wild, Jurgen. Tool for gauging the corners of workpieces of sheet metal or the like. 4,434,559, Cl. 33-174.00L.
Laurent, Henry: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, 4,435,327, Cl. 260-397.500.
Lavorazione Materie Plastiche L.M.P. S.p.A.: *See—*
Colombo, Roberto, 4,435,345, Cl. 264-53.000.
Leah, George R., to Pennwalt Corporation. Adherent, acid cured resin protective coatings for concrete and steel. 4,435,472, Cl. 428-333.000.
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Foggini, Giovanni, 4,435,009, Cl. 296-97.00H.
Lebert, Ulrich: *See—*
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.
LeBlond, Claude W., to Gerber Garment Technology, Inc. Method and apparatus for sealing out sheet material. 4,434,691, Cl. 83-56.000.
Lecolier, Serge; and Raynal, Serge, to Societe Nationale des Poudres et Explosifs. Associations of bases, resulting from the combination of a lithium alkyl or aryl with an alkali metal amide or hydride, polymerization process in which they are used, and product obtained. 4,435,312, Cl. 502-157.000.
Le Count, David J.: *See—*
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Lee, Cheuk M.; and Parks, James A., to Abbott Laboratories. 5-Substituted 2,3-dihydrobenzofuran-2-carboxylic acids and their use in diuretic compositions. 4,435,422, Cl. 424-285.000.
Lee, Chong H., to Suh Won America, Inc. Dual purpose pallet sheet. 4,434,894, Cl. 206-526.000.
Lee, John D.: *See—*
Aujla, Sharanjit S.; and Lee, John D., 4,435,034, Cl. 339-98.000.
Lee, Wai-Tak P.: *See—*
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Leech, Brad G.: *See—*
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Leeper, Harold M., to ALZA Corporation. Elastomeric active agent delivery system and method of use. 4,435,180, Cl. 604-896.000.
Le Fur, Gerard R.; and Renault, Christian L. A., to Pharmindustrie. 3-[2-(3-Alkyl and alkenyl-4-piperidyl)-ethyl]-indoles for inhibiting serotonin uptake and for releasing serotonin. 4,435,410, Cl. 424-267.000.
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., to A. E. Staley Manufacturing Company. Soy isolate suitable for use in imitation cheese. 4,435,438, Cl. 426-656.000.
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, to USV Pharmaceutical Corporation. Method of stimulating production of IgM antibodies. 4,435,409, Cl. 424-266.000.
Leight, Howard S. Disposable ear plug. 4,434,794, Cl. 128-152.000.
Leipelt, Paul A.: *See—*
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Leiter, Harold E.: *See—*
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Lelental, Mark; and Steklenski, David J., to Eastman Kodak Company. Electrically activatable recording element and process. 4,435,490, Cl. 430-45.000.
Lemke, Kenneth W., to M&T Chemicals Inc. Bright nickel electroplating. 4,435,254, Cl. 204-49.000.
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, to Richter Gedeon Vegyeszeti Gyar Rt. Heterocyclic compounds containing an alkoxycarbonyl and a substituted methyl group. 4,435,322, Cl. 260-239.00A.
Les Cables de Lyon: *See—*
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Lever Brothers Company: *See—*
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Lowry, Michael R., 4,435,310, Cl. 252-370.000.
Pader, Morton, 4,435,380, Cl. 424-49.000.
Levin, Leonard J., to RCA Corporation. Information record with a thick overcoat. 4,435,801, Cl. 369-275.000.
Levine, Peter A.: *See—*
Bendell, Sidney L.; and Levine, Peter A., 4,435,730, Cl. 358-213.000.
Levine, Richard, to United Technologies Corporation. Cooling system for turbines. 4,435,123, Cl. 416-95.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Agricultural pyridinesulfonamides. 4,435,206, Cl. 71-92.000.
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., to Owens-Corning Fiberglas Corporation. Strand guide for packaging apparatus. 4,434,946, Cl. 242-18.00G.
Lewis, Robert M.; and Slaugh, Lynn H., to Shell Oil Company. Conversion of dimethyl ether to formaldehyde. 4,435,602, Cl. 568-470.000.
Leybold-Heraeus GmbH: *See—*
Stenzel, Otto; and Flecker, Pierre, 4,435,818, Cl. 373-104.000.
Liao, Henry H., to Xerox Corporation. One shot predictor for mixed mode documents. 4,435,726, Cl. 358-135.000.
Liberty Carton Co.: *See—*
Rivkin, Eric M., 4,434,899, Cl. 211-41.000.
Rivkin, Eric M., 4,435,028, Cl. 312-258.000.
Licciardello, Michael; and Boden, Richard M., to International Flavors & Fragrances Inc. Methyl carbonate of α,3,3-trimethyl cyclohexane methanol, organoleptic uses thereof and process for preparing same. 4,435,331, Cl. 260-463.000.
Licentia Patent-Verwaltungs-GmbH: *See—*
Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, 4,435,773, Cl. 364-724.000.
Lidstom, Thorbjorn G.: *See—*
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Lin, Shiow-Ching, to W. R. Grace & Co. N-Cyano amide compositions and adducts thereof. 4,435,549, Cl. 525-504.000.
Lindahl, Lars: *See—*
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Lindenschmidt, Gerhard: *See*—
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Lindgren, Carl, to Koppers Company, Inc. Device for adjusting the position of a track mounted car. 4,435,250, Cl. 202-239.000.
Lindorfer, Walter; and Jan-Held, Wilhelm, to Wintershall AG. Process for the temporary storage of recyclable liquid wastes in underground salt caverns. 4,435,290, Cl. 210-708.000.
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., to Phillips Petroleum Company. Sulfur based metal cleaners. 4,435,304, Cl. 252-156.000.
Link, Edwin A.; and Mikulecky, Harvey W., to RTE Corporation. Primary circuit breaker. 4,435,690, Cl. 335-37.000.
Linley, Francis M., Jr., to Universal Thread Grinding Company. Anti-backlash spring-mounted nut. 4,434,677, Cl. 74-409.000.
Linzberger, Robert, to Gebruder Buhler AG. Knife scraper for drums, particularly the drums of a cylinder mill. 4,434,522, Cl. 15-256.510.
Lipinski, Christopher A.: *See*—
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Litman, David J.: *See*—
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Liu, Kou-chang, to GAF Corporation. Herbicidal compounds, compositions, and method of use. 4,435,588, Cl. 500-21.000.
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Loacker, Artur: *See*—
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Whitcomb, William T.; and Butler, John V., 4,434,647, Cl. 73-1.00R.
Loev, Bernard; Jones, Howard; and Shroff, James R., to USV Pharmaceutical Corporation. N-Substituted 1,4-dihydropyridazines and pharmaceutical compositions. 4,435,395, Cl. 424-248.500.
Loffelman, Frank F.; and Brady, Thomas E., to American Cyanamid Company. Novel polymeric light stabilizers for polymers. 4,435,555, Cl. 526-261.000.
Long, David J.: *See*—
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Lonne, Klaus: *See*—
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Lorie, Raymond A.; and Strong, Hovey R., Jr., to International Business Machines Corporation. Method for conditional branch execution in SIMD vector processors. 4,435,758, Cl. 364-200.000.
Louboutin, Robert; and Riotte, Michel, to Degremont. Liquid filter device. 4,435,286, Cl. 210-116.000.
Lowry, Michael R., to Lever Brothers Company. Manufacture of multicolored detergent bars having sinusoidal striping. 4,435,310, Cl. 252-370.000.
Lozano, Gerald L.: *See*—
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Lu, James W. B., to McQuay Inc. Patterned heat exchanger fin. 4,434,846, Cl. 165-161.000.
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Ludwig, George C., to Tom McGuane Industries, Inc. Fuel flow regulator control for a diesel engine with exhaust gas driven turbocharger. 4,434,761, Cl. 123-383.000.
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T. Process for preparing substituted urea derivatives. 4,435,567, Cl. 544-165.000.
Luh, Howard H., to Ford Aerospace & Communications Corp. Grating lobe eliminator. 4,435,714, Cl. 343-753.000.
Lupo, Frank V. Roof bolter vehicle and wheels therefor. 4,434,864, Cl. 180-6.200.
Luthi, Oscar; and Carlsmith, Lawrence A., to Ingersoll-Rand Company. Mixer for use in pulp processes. 4,435,085, Cl. 366-155.000.
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, to Sachs-Systemtechnik GmbH. System for automatic actuation of a motor vehicle clutch. 4,434,879, Cl. 192-0.052.
Lynell Medical Technology Inc.: *See*—
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Lyons, William C. Downhole turbine rotary drilling device. 4,434,862, Cl. 175-103.000.
Lysenko, Zenon; and Pews, Richard G., to Dow Chemical Company, The. Process for the preparation of substituted pyridines. 4,435,573, Cl. 546-250.000.
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., to Vsesojuzny Elektrotekhnickesky Institut Imeni V.I. Lenina. Method of pulsed control of high-tension thyristor rectifying arrangement and system for effecting same. 4,435,748, Cl. 363-54.000.
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Guido, Heinz; and Wolfgarten, Hubert, 4,435,812, Cl. 373-72.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Kobler, Ingo; and Mische, Hans-Jurgen, 4,434,979, Cl. 271-307.000.
M&T Chemicals Inc.: *See*—
Lemke, Kenneth W., 4,435,254, Cl. 204-49.000.
M.U. Engineering & Mfg., Inc.: *See*—
Skinner, James R.; and Atwood, Robert G., 4,434,891, Cl. 206-444.000.
Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, to Aida Engineering, Ltd. C-Frame press. 4,434,646, Cl. 72-451.000.
Maggi, Gian P.: *See*—
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Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, to Chimica Bulciago S.r.l. Acetonitrile solvate of an α-aminoacyl chloride hydrochloride. 4,435,333, Cl. 260-465.00D.
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Majewski, Klaus-Peter: *See*—
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Maly, Zdenek; and Blazek, Vladislav. Arrangement for measurement of dynamic properties of microparticles. 4,435,080, Cl. 356-426.000.
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Mandel, Richard M. Overhead access assembly. 4,435,010, Cl. 296-100.000.
Mangartz, Karl-Heinz: *See*—
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Manktelow, Gerald O.: *See*—
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.
Mann, Melvin S.: *See*—
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Mannuzza, Frank J.: *See*—
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Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.
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Mariani, Elio; and Ballato, Arthur, to United States of America, Army. Method of frequency trimming surface acoustic wave devices. 4,435,441, Cl. 427-10.000.
Maris, John M. Method of predicting the approaching stall of an aircraft wing. 4,435,695, Cl. 340-966.000.
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., to Black Clawson Co., The; and Air Products & Chemicals, Inc. Process for the oxygen delignification of pulp mill rejects. 4,435,249, Cl. 162-24.000.
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Marshall, William J., Jr.; and Brigham, Gerald A., to Sanders Associates, Inc. Wall-driven oval ring transducer. 4,435,794, Cl. 367-155.000.
Marston, Alan D.; and Anne, Lenin, to Hewlett-Packard Company. Edge seal with polysilicon in LOCOS process. 4,435,446, Cl. 427-93.000.

Martel, Thomas J.: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.

Martin, Andrew C.: *See—*
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Martin, Anthony F.: *See—*
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Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, to PPG Industries, Inc. Applicator for applying a coating to a surface. 4,434,521, Cl. 15-230.110.

Martin, Gordon W.; and Strohl, John, to Bendix Corporation, The. Oxygen sensing cell. 4,435,268, Cl. 204-408.000.

Martin, William B.: *See—*
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Martino, Germain: *See—*
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Martinray Industries Ltd.: *See—*
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Maruko Seiyaku Co., Ltd.: *See—*
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Marx, Matthias: *See—*
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Maskasky, Joe E., to Eastman Kodak Company. Controlled site epitaxial sensitization. 4,435,501, Cl. 430-434.000.

Masler, William F., III. Method of making and using novel scale inhibiting terpolymer. 4,435,556, Cl. 526-317.000.

Masonite Corporation: *See—*
Cook, Melvin W., 4,434,900, Cl. 211-189.000.

Massachusetts Institute of Technology: *See—*
Wurtman, Richard J., 4,435,424, Cl. 424-319.000.

Massey-Ferguson Services N.V.: *See—*
Bailey, Alfred J., 4,434,605, Cl. 56-16.400.

Masuda, Senichi; and Nonogaki, Yutaka. Bipolar ionic current probe unit and method for measuring positive and negative current densities by means of the same probe unit. 4,435,681, Cl. 324-459.000.

Masuda, Toyohiko: *See—*
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Mathis, Ronald D.; and Reed, Jerry O., to Phillips Petroleum Company. Process for cleaning metal surfaces of poly(arylene sulfide) deposits. 4,435,221, Cl. 134-2.000.

Matsko, Theodore N., to Babcock & Wilcox Company, The. Breakpoint chlorination control system. 4,435,291, Cl. 210-739.000.

Matsko, Theodore N.: *See—*
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.

Matson, Carl G., to Hamilton Equipment Co., Inc. Self-clamping rotary vibrator and mount therefor. 4,435,083, Cl. 366-114.000.

Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, to Kanebo, Ltd.; and Kanebo Synthetic Fibers Ltd. Apparatus for treating pile articles. 4,434,631, Cl. 68-171.000.

Matsui, Yasuo, to Hitachi, Ltd. Frame synchronizer. 4,435,826, Cl. 375-115.000.

Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, to Toyo Engineering Corporation. Method of treating heavy oil. 4,435,276, Cl. 208-96.000.

Matsumoto, Akio; and Araki, Kazuhiro, to Matsushita Electric Works, Ltd. Motor-driven movement for timepiece. 4,435,087, Cl. 368-76.000.

Matsumoto, Keisuke: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Matsumoto, Muneaki: *See—*
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Matsumoto Seiyaku Kogyo Kabushiki Kaisha: *See—*
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,435,587, Cl. 556-410.000.

Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, to Tokyo Tatsuno Co., Ltd. Liquid quantity measuring apparatus. 4,434,657, Cl. 73-304.00C.

Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, to Minemet Recherche. Process for the preparation of methacrylic acid esters. 4,435,594, Cl. 560-205.000.

Matsumura, Hisashi: *See—*
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, to Nippon Shinyaku Co., Ltd. Carbamylpiperazine compounds. 4,435,397, Cl. 424-250.000.

Matsunawa, Masahiko: *See—*
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Matsuo, Saburo: *See—*
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Matsuo, Takashi: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Matsuoka, Fumio: *See—*
Chiba, Masakazu; and Matsuoka, Fumio, 4,435,000, Cl. 280-806.000.

Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, to Toyota Jidosha Kabushiki Kaisha. Air assist device of fuel injection type internal combustion engine. 4,434,766, Cl. 123-472.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamane, Tokuhito; and Tasai, Masaaki, 4,434,945, Cl. 242-7.140.
Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,434,819, Cl. 140-92.100.
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.
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Matsushita Electric Works, Ltd.: *See—*
Matsumoto, Akio; and Araki, Kazuhiro, 4,435,087, Cl. 368-76.000.

Matsushita, Hiroshi: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, to Mitsubishi Paper Mills, Ltd. Transfer-onto-plain paper type of pressure-sensitive copying paper. 4,435,471, Cl. 428-320.800.

Matsuura, Masahiko: *See—*
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Matui, Kunihiko; and Tanaka, Shikei, to Tokyo Shibaura Denki Kabushiki Kaisha. In-phase voltage elimination circuit for Hall element. 4,435,653, Cl. 307-309.000.

Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, to Hitachi, Ltd. Fuel supply control system. 4,435,151, Cl. 431-90.000.

Mauer, Richard L., to Rapid Ring Co., Inc. Rotary press punch ring and method of changing punches carried thereby. 4,434,690, Cl. 83-13.000.

Maus, Julius, to Gretsch-Unitas GmbH. Control mechanism for a window or door. 4,434,678, Cl. 74-471.00R.

Mayer, James M., to Monsanto Company. Substituted-butanediperoxoic acids and process for bleaching. 4,435,335, Cl. 260-502.00R.

Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., to Atari, Inc. Data processing system with programmable graphics generator. 4,435,779, Cl. 364-900.000.

Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Programmable channel selecting apparatus. 4,435,842, Cl. 455-181.000.

McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., to Hauserman, Inc. Partition head assembly for partition wall panels. 4,434,596, Cl. 52-243.100.

McAusland, Robert R., to Advanced Technology Laboratories. Elongated printed circuit flexible cables and method of making the same. 4,435,614, Cl. 174-117.0PC.

McBeth, Raymond A.: *See—*
Wright, Brian D.; McBeth, Raymond A.; and Wessels, Egon, 4,434,741, Cl. 114-264.000.

McCabe, Ralph P., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,434,762, Cl. 123-438.000.

McCabe, Ralph P.; and Marsh, Keith D., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,434,763, Cl. 123-440.000.

McCall, Francis L., to Specified Ceiling Systems. Drop ceiling frame construction. 4,434,599, Cl. 52-729.000.

McCarthy, Patrick J. Clothesline mast. 4,434,898, Cl. 211-1.300.

McCartney, Michael S., to Combustion Engineering, Inc. Method for low load operation of a coal-fired furnace. 4,434,727, Cl. 110-347.000.

McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., to International Business Machines Corporation. Interactively rearranging spatially related data. 4,435,777, Cl. 364-900.000.

McCaskill, Rex A.: *See—*
Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., 4,435,778, Cl. 364-900.000.

McCollough, John K., Jr.; and O'Neill, John H., Jr., to Milliken Research Corporation. Apparatus for the application of liquids to moving materials. 4,434,632, Cl. 68-205.00R.

McCombie, Stuart W., to Schering Corporation. (5R-6S,8R)-6-(1-Hydroxyethyl)-2-(2-glycylaminoethylthio)-penem-3-carboxylic acid. 4,435,413, Cl. 424-270.000.

McCoy, David R., to Texaco Inc. Method for demulsification of bitumen emulsions using polyalkylene polyamine salts. 4,434,850, Cl. 166-267.000.

McDonnell Douglas Corporation: *See—*
Cox, Ronald L., 4,435,100, Cl. 403-27.000.
Wilder, Vernon H., 4,435,109, Cl. 408-14.000.

McDonough, Kevin C.: *See*—
Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.
McDougall, Robert J., to Black & Decker Inc. Dust shroud for an abrading tool. 4,434,587, Cl. 51-170.0MT.
McDowell, Hunter L., to United States of America, Army. Broadband slow wave structure attenuator. 4,435,689, Cl. 333-81.00A.
McEvoy, Francis J.; and Albright, Jay D., to American Cyanamid Company. Substituted N-(ω-aroylpropionyl) derivatives of α-amino acids and esters thereof. 4,435,329, Cl. 260-455.00R.
McHenry, Max D., to A. B. Dick Company. Printing apparatus including serial printing means. 4,434,715, Cl. 101-76.000.
McInroy, John W.: *See*—
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,435,777, Cl. 364-900.000.
McKechnie, Ronald M. K., to Vaal Reefs Exploration and Mining Company Limited. Guide roller for skip or cage. 4,434,876, Cl. 187-95.000.
McKee, James A.: *See*—
Ross, Ashley M.; and McKee, James A., 4,434,712, Cl. 99-646.00S.
McKenzie, Robert W., to Rockwell International Corporation. Slide lock handle. 4,435,029, Cl. 312-320.000.
McKinney, Linda D.; and Jenkines, Randall C., to Dow Chemical Co., The. Carpet backed with fire suppressant polyurethane composition. 4,435,459, Cl. 428-95.000.
McManus, John R.: *See*—
Jackson, Dale; and McManus, John R., 4,434,841, Cl. 165-125.000.
McNulty, John P., to Bristol Composite Materials Engineering Limited. Elongate structure. 4,435,242, Cl. 156-264.000.
McQuay Inc.: *See*—
Lu, James W. B., 4,434,846, Cl. 165-161.000.
Mead Corporation, The: *See*—
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.
Culpepper, Will L., 4,434,602, Cl. 53-473.000.
Mech, Stephen J., Jr.: *See*—
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Walsh, Michael M., 4,434,617, Cl. 60-520.000.
Mecklenbrauker, Wolfgang F. G.: *See*—
Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., 4,435,774, Cl. 364-726.000.
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Medical College of Wisconsin: *See*—
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Meisch, Robert L.: *See*—
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Mekosh, George, Jr., to Budd Company, The. Steering motorized truck. 4,434,719, Cl. 105-168.000.
Melka, James P., Jr.; and Barnes, John F., to Western Electric Co., Inc. Method and apparatus for the recovery of palladium from spent electroless catalytic baths. 4,435,258, Cl. 204-109.000.
Mendel, Eric: *See*—
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Merck & Co., Inc.: *See*—
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Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
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Mericle, Robert W., to Ethicon, Inc. Instrument for applying ligating clips. 4,434,795, Cl. 128-303.00R.
Meritt, Allan S., to International Business Machines Corporation. Balanced channel finding method. 4,435,755, Cl. 364-200.000.
Merrell Dow Pharmaceuticals: *See*—
Harrison, Boyd L.; and Doherty, Niall S., 4,435,420, Cl. 424-277.000.
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Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.
Mertens, Guy; and Laroche, Pierre, to Glaverbel. Composite mirror panels. 4,435,043, Cl. 350-288.000.
Meshberg, Philip. Personal defense actuator. 4,434,914, Cl. 222-153.000.
Messer GriesSeim GmbH: *See*—
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Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
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Metallgesellschaft Aktiengesellschaft: *See*—
Schwartz, Werner; and Fischer, Peter, 4,435,211, Cl. 75-62.000.
Meulendyk, John W., to Pneumo Corporation. Free piston engine pump with energy rate smoothing. 4,435,133, Cl. 417-364.000.
Meyer, Franklin, Jr. Indicator snap gage assemblies. 4,434,557, Cl. 33-148.00R.
Meyerhoff, Jerome D.; and Forshay, Steven E., to Motorola, Inc. Remote control circuit. 4,435,844, Cl. 455-218.000.
Meyerle, Michael: *See*—
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Miale, Joseph N.: *See*—
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Michaelis, Klaus-Peter; and Schneider, Rainer, to Ciba-Geigy Corporation. Dithiophosphates. 4,435,338, Cl. 260-929.000.
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., to United States of America, Energy. Ultrasonic inspection and deployment apparatus. 4,434,660, Cl. 73-622.000.
Michaels, Thomas E.: *See*—
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., 4,434,660, Cl. 73-622.000.
Michelet, Daniel: *See*—
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Micheletto, Renato. Multifunctional instrument for determining the position and course of the sun, the inclination for maximal insolation of a plane and the correspondence from solar and conventional time. 4,435,640, Cl. 235-78.00M.
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, to Ricoh Company, Ltd. Cleaning apparatus for electrophotography comprising lubricant film applicator means. 4,435,074, Cl. 355-15.000.
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, to Bayer Aktiengesellschaft. Process for the production of highly shrinkable split tows of acrylonitrile polymers. 4,434,530, Cl. 19-0.460.
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,435,503, Cl. 430-548.000.
Miho, Takuya: *See*—
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Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo. Vortex injector. 4,435,129, Cl. 417-151.000.
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Mikroyannidis, Ioannis A.: *See*—
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Mikulecky, Harvey W.: *See*—
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Milanowski, G. Jan: *See*—
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Miles Laboratories, Inc.: *See*—
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Millar, Thomas D., to AHI Operations Limited. Methods of and/or apparatus for milking animals. 4,434,744, Cl. 119-14.020.
Miller, David K.: *See*—
Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., 4,435,810, Cl. 372-58.000.
Miller, Richard: *See*—
Nall, Lawson H.; and Miller, Richard, 4,434,689, Cl. 82-4.00C.
Miller, Richard L., to Xerox Corporation. Toner removal apparatus. 4,435,073, Cl. 355-15.000.
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., to International Business Machines Corporation. Buffered peripheral subsystems. 4,435,762, Cl. 364-200.000.
Milliken Research Corporation: *See*—
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Mills, Larry E.; and Dove, Thomas D., to American Standard Inc. Envelope assembly. 4,435,001, Cl. 282-11.50A.
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Minnesota Mining and Manufacturing Company: *See*—
Randklev, Ronald M., 4,435,160, Cl. 433-9.000.
Minogue, Robert W. Connector housing for neon tubing. 4,434,569, Cl. 40-545.000.
Minolta Camera Kabushiki Kaisha: *See*—
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Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.

Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., to Exxon Research and Engineering Co. Polymerization reaction by charge injection. 4,435,261, Cl. 204-168.000.

Mische, Hans-Jurgen: *See*—
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Miserlis, Constantine D., to Badger Company, Inc., The. Process for the production of phthalic anhydride. 4,435,580, Cl. 549-248.000.

Miserlis, Constantine D., to Badger Company, Inc., The. Process for the production of phthalic anhydride. 4,435,581, Cl. 549-248.000.

Mishkin, Ronald H.: *See*—
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Mitsubishi Denki Kabushiki Kaisha: *See*—
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Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.
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Mitsubishi Paper Mills, Ltd.: *See*—
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Mitsubishi Petrochemical Company Limited: *See*—
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Mitsubishi Rayon Co., Ltd.: *See*—
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Miura, Kenji: *See*—
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Miwa, Hirohide; and Shimura, Takaki, to Fujitsu Limited. Ultrasonic diagnostic system. 4,434,661, Cl. 73-625.000.

Miwa, Hirohide: *See*—
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Miwa, Naoto: *See*—
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Miyai, Masahiko: *See*—
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Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, to Sumitomo Electric Industries, Ltd.; and Nippondenso Co., Ltd. Low electrostatic capacity wire-wound type ignition cable. 4,435,692, Cl. 338-214.000.

Miyano, Muneyuki, to Kurita Machinery Manufacturing Company Limited. Expressing plate assembly for filter press. 4,435,288, Cl. 210-227.000.

Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, to Fujitsu Limited. Ultrasonic wave tomographic imaging system. 4,434,658, Cl. 73-618.000.

Miyazaki, Yoshihisa: *See*—
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Miyoshi, Kazuhito: *See*—
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Mizoe, Kenji: *See*—
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Mizuhara, Howard, to GTE Products Corporation. Pressed and sintered composite body comprising a thin tape cast layer and a thick base layer. 4,435,480, Cl. 428-548.000.

Mizuhashi, Mamoru: *See*—
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Mizukoshi, Kiyoshi: *See*—
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Mizuno, Toru: *See*—
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Mizusawa, Akira, to Nifco Inc. Nut. 4,435,111, Cl. 411-437.000.

Mobay Chemical Corporation: *See*—
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Mobil Oil Corporation: *See*—
Audeh, Costandi A., 4,435,270, Cl. 208-11.00R.
Chang, Clarence D.; and Miale, Joseph N., 4,435,516, Cl. 502-71.000.
Derr, Walter R.; and Sarli, Michael S., 4,435,275, Cl. 208-89.000.

Modine Manufacturing Company: *See*—
Granetzke, Dennis C., 4,434,773, Cl. 123-557.000.

Mon, George, to United States of America, Army. Laminar proportional amplifier and laminar jet angular rate sensor with rotating splitter for null adjustment. 4,434,813, Cl. 137-829.000.

Mondini, Giancarlo, to Rieter Machine Works, Ltd. Apparatus for controlling the working conditions in a processing machine of the staple fiber spinning plant. 4,434,531, Cl. 19-99.000.

Monsanto Company: *See*—
Franz, John E., 4,435,204, Cl. 71-86.000.
Graham, Tommy E., 4,435,191, Cl. 55-16.000.
Mayer, James M., 4,435,335, Cl. 260-502.00R.

Montedison S.p.A.: *See*—
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.

Montgomery, Marshall N., to Dresser Industries, Inc. Apparatus for testing earth formations. 4,434,653, Cl. 73-151.000.

Moore, Ann A., to Snugli, Inc. Soft orthopedic pouch-type infant carrier. 4,434,920, Cl. 224-160.000.

Moore, Bernard S.: *See*—
Cue, Berkeley W., Jr.; and Moore, Bernard S., 4,435,578, Cl. 548-309.000.

Moore, Jack M.: *See*—
Ciaramitaro, David A.; and Moore, Jack M., 4,435,232, Cl. 149-2.000.

Moore, L. Dow: *See*—
Das, Balbhadra; and Moore, L. Dow, 4,435,474, Cl. 428-391.000.

Moormann, Hans: *See*—
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, 4,435,789, Cl. 365-203.000.

Morawiez, Alfred: *See*—
Lauer, Gerhard; Morawiez, Alfred; and Wild, Jurgen, 4,434,559, Cl. 33-174.00L.

Morel, Michel: *See*—
Henaff, Louis; Morel, Michel; and Favennec, Jean L., 4,434,742, Cl. 118-723.000.

Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., to Texaco Inc. Method of enhanced oil recovery employing nitrogen injection. 4,434,852, Cl. 166-273.000.

Morello, Herbert: *See*—
Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, 4,435,243, Cl. 156-361.000.

Mori, Yasuki: *See*—
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.

Mori, Yoshiaki: *See*—
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.

Morimoto, Masahiro: *See*—
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, 4,435,443, Cl. 427-38.000.

Morinaga, Kazuo: *See*—
Tsukada, Toshiji; and Morinaga, Kazuo, 4,435,064, Cl. 355-1.000.

Morishita, Hirosada: *See*—
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.

Morishita, Mitsuharu, to Mitsubishi Denki Kabushiki Kaisha. Regulator for controlling output from generator having ambient temperature override. 4,435,676, Cl. 322-33.000.

Morishita, Sadao: *See*—
Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, 4,435,471, Cl. 428-320.800.

Morita, Akiyoshi; and Sato, Mitsuyoshi, to Toyota Jidosha Kabushiki Kaisha. Screw in-line type injection molding method and apparatus for low-pressure injection molding. 4,435,142, Cl. 425-145.000.

Morita, Hideo; and Iwasa, Yoshio, to Nissan Motor Co., Ltd. Air induction control device for internal combustion engine. 4,434,778, Cl. 123-587.000.

Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, to Toyo Kogyo Co., Ltd. Cooling system for liquid-cooled internal combustion engines. 4,434,749, Cl. 123-41.020.

Moritz, Robert R., to Rolls-Royce Incorporated. Low drag surface. 4,434,957, Cl. 244-35.00R.

Morris, Alan J., to Kerr-McGee Chemical Corporation. Process for producing titanium tetrachloride. 4,435,365, Cl. 423-76.000.

Morris, Earl L.; and Hafner, V. Walter, to Acorn Engineering Company. Wall sleeve and installation jig for multiple adjacent fixture mounting. 4,434,516, Cl. 4-252.00R.

Morris, John D. Frozen dessert. 4,435,439, Cl. 426-565.000.

Morrow, Charles R.: *See*—
Tschudy, Donald B.; and Morrow, Charles R., 4,434,865, Cl. 180-19.00H.

Morton, Edward W.: *See*—
Evans, George S.; Gilmore, John F.; and Morton, Edward W., 4,435,670, Cl. 315-58.000.

Mosca, Virgilio: *See*—
Bonaparte, Ennio; and Mosca, Virgilio, 4,435,619, Cl. 179-17.00R.

Mosely, John F.; and Austin, Stephen R., to Superior Handling Equipment, Inc. Self-propelled freight handling truck. 4,435,113, Cl. 414-347.000.

Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, to Klockner-Humboldt-Deutz AG. System for heating the operators cabin of a

machine powered by an internal combustion engine. 4,434,934, Cl. 237-12.30R.

Mosimann, David. Dental turbine. 4,435,161, Cl. 433-132.000.

Moss, Gerald, to Exxon Research and Engineering Co. Low pollution method of burning fuels. 4,435,148, Cl. 431-7.000.

Moss, William H.: *See*—
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.

Motorola, Inc.: *See*—
Dellande, Brian W.; and Wurzburg, Henry, 4,435,824, Cl. 375-46.000.
Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., 4,435,713, Cl. 343-702.000.
Joseph, Eric D.; and Davies, Robert B., 4,435,678, Cl. 323-273.000.
Meyerhoff, Jerome D.; and Forshay, Steven E., 4,435,844, Cl. 455-218.000.

Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., to Conoco Inc. Process for the preparation of linear olefins from triethylaluminum and tripropylaluminum via growth, isomerization and metathesis. 4,435,606, Cl. 585-324.000.

Mozer, Forrest S. Method and apparatus for time domain compression and synthesis of unvoiced audible signals. 4,435,831, Cl. 381-30.000.

Mukai, Nobuhiro: *See*—
Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, 4,435,540, Cl. 524-780.000.

Mukai, Yasuteru: *See*—
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.

Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Ignition apparatus for internal combustion engine. 4,434,753, Cl. 123-143.00B.

Mulcahy, Harry W.; and Kaufhold, Horst T., to AMSTED Industries Incorporated. Multi-rate side bearing for a railway truck. 4,434,720, Cl. 105-199.0CB.

Muller, Beat; and Roth, Martin, to Ciba-Geigy AG. Cationic hydrazone derivatives, processes for their preparation and their use. 4,435,489, Cl. 430-17.000.

Muller, Leo: *See*—
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.

Muller, Manfred: *See*—
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Muller, Peter R.: *See*—
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.

Muller, Rolf: *See*—
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, to Robert Bosch GmbH. Machine tool, especially a hand-held power tool with a turnable clamping element for clamping a tool on the tool spindle. 4,434,586, Cl. 51-170.0PT.

Munakata, Hideo: *See*—
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.

Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, to Toyoda Koki Kabushiki Kaisha. Bed for grinding machine. 4,434,585, Cl. 51-166.00R.

Murahara, Koichi, to Piolt, Man-Nen-Hitsu Kabushiki Kaisha. Fountain pen with motor feed. 4,435,099, Cl. 401-145.000.

Murakami, Fumiki: *See*—
Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, 4,435,594, Cl. 560-205.000.

Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, to Nippon Steel Corporation. Concentric multi-tube-system nozzle situated beneath the surface of the melt in a refining vessel. 4,434,976, Cl. 266-268.000.

Murakami, Yasushi: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Murdoch, Ian G., to Oilgear Company, The. Coupling seal and method of assembly. 4,434,811, Cl. 137-515.000.

Murphy, John S. Insulating structure. 4,434,579, Cl. 49-63.000.

Murray, Lance R.; and Wu, Ta-Ming, to Burroughs Corporation. Two-level threshold circuitry for large scale integrated circuit memories. 4,435,658, Cl. 307-530.000.

Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, to Kabushiki Kaisha Yakult Honsha. Composition for promoting growth of bifidobacteria. 4,435,389, Cl. 424-181.000.

Myers, Harry J.: *See*—
August, Charles; and Myers, Harry J., 4,434,667, Cl. 73-861.120.

Myers, William H.; and Dundas, Dennis L., to Hoover Universal, Inc. Split injection mold. 4,435,147, Cl. 425-577.000.

Nabeta, Teiichi: *See*—
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.

Nabisco Brands, Inc.: *See*—
Caporaso, John A., 4,435,434, Cl. 426-108.000.

Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., to North American Philips Corporation. Clock signal recovery circuit. 4,435,687, Cl. 331-23.000.

Nadeau, Francois: *See*—
Drouet, Michel G.; and Nadeau, Francois, 4,435,631, Cl. 219-124.020.

Nafissi-Varchei, M. Mehdi, to Schering Corporation. Guanidine compounds. 4,435,398, Cl. 424-250.000.

Nagai, Junichi: *See*—
Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, 4,435,048, Cl. 350-357.000.

Nagai, Yoji: *See*—
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, to Mitsubishi Denki Kabushiki Kaisha; and Japan Audatex Co., Ltd. Portable type automobile repair estimate issuing device. 4,435,769, Cl. 364-464.000.

Nagao, Nobuya; and Sakai, Teturou, to Tokyo Shibaura Denki Kabushiki Kaisha. Color signal processing circuit to reduce cross-color disturbance and color fringing. 4,435,725, Cl. 358-36.000.

Nagao, Nobuya: *See*—
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,435,657, Cl. 307-516.000.

Nagata, Kazuo; and Ishii, Susumu, to Yoshida Kogyo K. K. Apparatus for separating castings into necessary and unnecessary pieces. 4,434,923, Cl. 225-97.000.

Nagler, Franz: *See*—
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.

Nakagami, Kazuto: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Nakagawa, Kazuyuki: *See*—
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, 4,435,404, Cl. 424-258.000.

Nakagawa, Mineo: *See*—
Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, 4,435,600, Cl. 564-464.000.

Nakagawa, Seisakusho Co., Ltd.: *See*—
Ogawa, Goro, 4,434,533, Cl. 19-247.000.

Nakagawa, Shuichi: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Nakaguti, Osamu: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.

Nakai, Masaaki; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Exposure control device for cameras. 4,435,057, Cl. 354-426.000.

Nakajima, Hideki, to Shimano Industrial Company Limited. Fishing reel having a magnetic brake and non-magnetizable bearing. 4,434,951, Cl. 242-84.52B.

Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, to Sony Corporation. Magnetic recording medium. 4,435,485, Cl. 428-694.000.

Nakajima, Kenji: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Nakakimura, Hiroshi: *See*—
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Nakamoto, Hidekazu: *See*—
Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, 4,435,151, Cl. 431-90.000.

Nakamura, Iwao: *See*—
Chiba, Kazuo; and Nakamura, Iwao, 4,434,977, Cl. 267-33.000.

Nakamura, Kuniyoshi: *See*—
Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, 4,435,673, Cl. 318-254.00A.

Nakamura, Naotaka: *See*—
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Nakano, Kazuo: *See*—
Iezuka, Isamu; and Nakano, Kazuo, 4,434,759, Cl. 123-325.000.

Nakata, Tokifumi: *See*—
Okada, Akio; Nakata, Tokifumi; and Nemoto, Kiyoshi, 4,435,134, Cl. 417-428.000.

Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Error alarm system for detecting an abnormal condition in a peripheral system of an electronic cash register. 4,435,767, Cl. 364-405.000.

Nakatsugawa, Shigekazu, to Yamasa Shoyu Kabushiki Kaisha. Enhancer of anti-tumor effect. 4,434,788, Cl. 128-1.100.

Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, to Kansai Paint Co., Ltd. Emulsion composition containing cellulose derivative. 4,435,531, Cl. 524-37.000.

Nakayashiki, Susumu: *See*—
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Nall, Lawson H.; and Miller, Richard, to Tri Tool Inc. Cutter head drive shaft for portable tube end preparation tool. 4,434,689, Cl. 82-4.00C.
Namsick, Raymond J.: *See*—
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., 4,435,240, Cl. 156-242.000.
Narasaka, Shin: *See*—
Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, 4,434,764, Cl. 123-440.000.
Nati, Salvatore F., Jr.: *See*—
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,435,679, Cl. 323-350.000.
National Distillers and Chemical Corporation: *See*—
Corbett, Herbert O., 4,435,241, Cl. 156-244.110.
Hinnenkamp, James A., 4,435,598, Cl. 562-546.000.
National Presto Industries, Inc.: *See*—
Ott, Richrd B., 4,434,909, Cl. 220-316.000.
National Research Development Corporation: *See*—
Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., 4,434,800, Cl. 128-665.000.
Hemp, John; and Al-Khazraji, Yousif A. H., 4,434,666, Cl. 73-861.120.
Roberts, Victor C.; and Sainz, Antonio J., 4,434,669, Cl. 73-861.250.
National Research Institute for Metals: *See*—
Tachikawa, Kyoji; and Yoshida, Yuji, 4,435,228, Cl. 148-11.50Q.
National Semiconductor Corporation: *See*—
Page, Ronald W., 4,435,684, Cl. 330-51.000.
Nau, Walter: *See*—
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, 4,434,934, Cl. 237-12.30R.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Dopaminergic stimulating and antianoxic 4-substituted 2H-indole-2-ones. 4,435,408, Cl. 424-263.000.
Nedreski, Robert J. Dew point sensor. 4,435,091, Cl. 374-20.000.
Nedreski, Robert J.: *See*—
Schmitt, Oscar A.; Nedreski, Robert J.; and Karlson, Eskil, 4,435,163, Cl. 434-263.000.
Neef, Gunter: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Neeff, Rutger: *See*—
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.
Neffgen, Bernd: *See*—
Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, 4,435,558, Cl. 528-45.000.
Neichi, Tomohiro: *See*—
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.
Nelson, Randolph J.: *See*—
Christopher, Terry M.; and Nelson, Randolph J., 4,434,616, Cl. 60-451.000.
Nemoto, Kiyoshi: *See*—
Okada, Akio; Nakata, Tokifumi; and Nemoto, Kiyoshi, 4,435,134, Cl. 417-428.000.
Neubauer, Douglas G.: *See*—
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.
Neubert, Robert, to Clean-Tex A/S. Floor mats of the washable, dirt adsorbing type. 4,435,451, Cl. 428-15.000.
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, to United States of America, National Aeronautics and Space Administration. Ion mass spectrometer. 4,435,642, Cl. 250-296.000.
Neuhaus, Gunter: *See*—
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.
Neuhauser, Hans J.; and Veutgen, Hans-Jurgen, to Goetze AG. Wear resistant cast iron alloy with spheroidal graphite separation and manufacturing method therefor. 4,435,226, Cl. 148-3.000.
Neumann, Ernst-Dieter: *See*—
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, 4,434,934, Cl. 237-12.30R.
New World Computer Company, Inc.: *See*—
Herman, Robert W., 4,435,736, Cl. 360-103.000.
Newman, Albert L.: *See*—
Szostak, Jan; and Newman, Albert L., 4,434,736, Cl. 112-258.000.
Newman, Robert H.: *See*—
Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., 4,435,296, Cl. 252-28.000.
Nguyen, Tuan A., to Ball Corporation. Buckle resistance for metal container closures. 4,434,641, Cl. 72-354.000.
Nianbilla Company Limited: *See*—
Zheng, Yea K., 4,435,124, Cl. 416-119.000.
Nichols, Omer: *See*—
Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer, 4,434,718, Cl. 102-522.000.
Nickel, Horst: *See*—
Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, 4,435,334, Cl. 260-501.120.
Nickel, William F. Shellfish mariculture apparatus. 4,434,743, Cl. 119-4.000.
Nicolas, Guy R. Method of treating steel surfaces to prevent wear, and coating obtained thereby. 4,435,227, Cl. 148-6.240.
Niconchuk, Alec W., to North Shore Laboratories Corporation. Repair material for tubeless tires. 4,435,470, Cl. 428-294.000.
Niedecker, Herbert. Process and apparatus for making partially filled air-free sausage casings. 4,434,528, Cl. 17-49.000.
Niedworok, Johannes F. Emergency escape ladder. 4,434,871, Cl. 182-198.000.
Niehues, Heiko: *See*—
Graalmann, Gerhard; and Niehues, Heiko, 4,434,563, Cl. 34-28.000.
Nielsen, Jorgen: *See*—
Fog, Jorgen L.; and Nielsen, Jorgen, 4,434,703, Cl. 89-37.00B.
Niessen, Cornelia: *See*—
Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, 4,435,806, Cl. 371-25.000.
Nifco Inc.: *See*—
Mizusawa, Akira, 4,435,111, Cl. 411-437.000.
Nihon Dixie Company, Limited: *See*—
Iioka, Akira, 4,435,344, Cl. 264-45.100.
Nihon Early Kabushiki Kaisha: *See*—
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.
Niimi, Hiroshi: *See*—
Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, 4,434,611, Cl. 57-328.000.
Niiyama, Eisuke; and Kodama, Hideyo, to Hitachi, Ltd. Continuous casting apparatus. 4,434,836, Cl. 164-429.000.
Nijhawan, Pramodh; and Avera, William W., to Bahnson Company, The. Baghouse filter. 4,435,197, Cl. 55-341.00R.
Nilsson, C. Gary: *See*—
Hedberg, David J.; and Nilsson, C. Gary, 4,435,734, Cl. 358-335.000.
Nilsson, Ralph L.; and Rangert, Bo R., to EMAB Electrolux Motor Aktiebolag. Arrangement for bearing of a crankshaft. 4,434,756, Cl. 123-195.00R.
Nimry, Tayseer S.: *See*—
Fields: Ellis K.; and Nimry, Tayseer S., 4,435,593, Cl. 560-119.000.
Ninomiya, Masakazu, to Nippondenso Co., Ltd. Air-fuel ratio control for internal combustion engine. 4,434,768, Cl. 123-489.000.
Nippon Air Brake Co., Ltd.: *See*—
Arikawa, Tetsuro, 4,435,768, Cl. 364-426.000.
Nippon Electric Co., Ltd.: *See*—
Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, 4,434,544, Cl. 29-578.000.
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, 4,435,666, Cl. 310-328.000.
Ito, Satoaki; and Harada, Hiroshi, 4,435,821, Cl. 375-1.000.
Kimoto, Manabu, 4,435,761, Cl. 364-200.000.
Kojima, Junichiroh; and Mizoe, Kenji, 4,435,840, Cl. 455-33.000.
Tsuzuki, Mitsuo; and Suga, Michihisa, 4,435,721, Cl. 346-140.00R.
Yasuoka, Nobuyuki, 4,435,787, Cl. 365-174.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Fujishima, Masakazu, 4,435,618, Cl. 381-7.000.
Nippon Seiko Kabushiki Kaisha: *See*—
Tagawa, Kenichi; and Iguchi, Takao, 4,435,024, Cl. 308-217.000.
Nippon Shinyaku Co., Ltd.: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.
Nippon Soken, Inc.: *See*—
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,435,140, Cl. 418-259.000.
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.
Nippon Steel Corporation: *See*—
Iuchi, Tohru, 4,435,092, Cl. 374-129.000.
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.
Nippondenso Co., Ltd.: *See*—
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 301-32.000.
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.
Ninomiya, Masakazu, 4,434,768, Cl. 123-489.000.
Yamamoto, Norboru; Makino, Tomoatsu; and Okuda, Ryoichi, 4,434,779, Cl. 123-609.000.
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives. 4,435,404, Cl. 424-258.000.

Nishida, Minoru: *See*—
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Takasa, 4,434,753, Cl. 123-143.00B.
Nishikawa, Akio: *See*—
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, to Matsushita Electric Industrial Company, Limited; and Honda Giken Kabushiki Kaisha. Fuel injection timing signal and crank angle signal generating apparatus. 4,434,770, Cl. 123-494.000.
Nishimura, Katsuo, to Citizen Watch Company Limited. Liquid crystal display device. 4,435,046, Cl. 350-334.000.
Nishimura, Susumu; and Nomura, Hiroaki, to Takeda Chemical Industries, Ltd. 5-[Substituted amino methyl]pyrrolo[2,3-d]pyrimidine-4-one. 4,435,569, Cl. 544-280.000.
Nishimura, Susumu; and Akimoto, Hiroshi, to Takeda Chemical Industries, Ltd. 5-(Phenyl or benzyl amino)methyl-pyrrolo[2,3-d]pyrimidin-4-one. 4,435,570, Cl. 544-280.000.
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, to A. Ahlstrom Osakeyhtio. Method and apparatus for pumping fiber suspensions. 4,435,122, Cl. 415-121.00B.
Niskanen, Toivo: *See*—
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.
Nissan Design International, Inc.: *See*—
Flowers, Allan L., 4,434,919, Cl. 224-42.210.
Nissan Motor Company, Limited: *See*—
Chiba, Kazuo; and Nakamura, Iwao, 4,434,977, Cl. 267-33.000.
Hakamata, Hitoshi, 4,435,011, Cl. 297-113.000.
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.
Horiuchi, Tomofusa, 4,434,774, Cl. 123-557.000.
Morita, Hideo; and Iwasa, Yoshio, 4,434,778, Cl. 123-587.000.
Sato, Yoshimi, 4,434,999, Cl. 280-752.000.
Shirase, Haruya; and Kondo, Takehisa, 4,434,776, Cl. 123-568.000.
Nissin Kogyo Kabushiki Kaisha: *See*—
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,434,707, Cl. 91-376.00R.
Niswander, James K.: *See*—
Stattel, Raymond J.; and Niswander, James K., 4,435,781, Cl. 364-900.000.
Nitschko, Theodor, to TMC Corporation. Ski binding jaw. 4,434,997, Cl. 280-625.000.
Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig, Karl O., to Stihl, Andreas. Arrangement for lubricating saw chains of power saws. 4,434,556, Cl. 30-123.400.
Nixon, Keith L., to Bell Industries, Inc. Self-centering saw mount. 4,434,684, Cl. 76-37.000.
Noda, Masaki: *See*—
Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, 4,435,688, Cl. 331-99.000.
Noda, Yukifumi: *See*—
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. M-Phenoxybenzamide derivatives. 4,435,332, Cl. 260-465.00D.
Noguchi, Koji: *See*—
Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, 4,435,494, Cl. 430-122.000.
Noguchi, Tamio: *See*—
Watanabe, Takaji; and Noguchi, Tamio, 4,435,220, Cl. 106-291.000.
Nojima, Shinichi: *See*—
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.
Nolt, James R., Jr., to Allis-Chalmers Corporation. Method for manufacturing babbitted bearings. 4,435,448, Cl. 427-234.000.
Nomoto, Kazuo: *See*—
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.
Nomura, Hiroaki: *See*—
Nishimura, Susumu; and Nomura, Hiroaki, 4,435,569, Cl. 544-280.000.
Nonn, Konrad: *See*—
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.
Nonogaki, Yutaka: *See*—
Masuda, Semichi; and Nonogaki, Yutaka, 4,435,681, Cl. 324-459.000.
Nooijen, Godefridus A. H.: *See*—
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,435,314, Cl. 502-154.000.
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., 4,435,551, Cl. 526-101.000.
North American Philips Corporation: *See*—
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., 4,435,687, Cl. 331-23.000.
North American Philips Electric Corp.: *See*—
Evans, George S.; Gilmore, John F.; and Morton, Edward W., 4,435,670, Cl. 315-58.000.
Heytmeijer, Herman R., 4,435,284, Cl. 209-3.000.
Plagge, Vernon L.; and Bhalla, Ranbir S., 4,435,669, Cl. 313-634.000.
North Shore Laboratories Corporation: *See*—
Niconchuk, Alec W., 4,435,470, Cl. 428-294.000.
North Wind Power Company, Inc.: *See*—
Coleman, Clint; and Currin, Hugh D., 4,435,646, Cl. 290-44.000.
Northern Engineering Industries, Plc.: *See*—
Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, 4,434,723, Cl. 110-245.000.
Northern Telecom Limited: *See*—
Aujla, Sharanjit S.; and Lee, John D., 4,435,034, Cl. 339-98.000.
Norton Company: *See*—
Hartline, Stephen D., 4,435,514, Cl. 501-117.000.
Norton, Desmond H. Cross country skiing simulating exerciser. 4,434,981, Cl. 272-97.000.
Norton, Robert L.: *See*—
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.
Nouvertne, Werner: *See*—
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.
Novak, Jan: *See*—
Svercl, Josef; Novak, Jan; and Kalab, Zdenek, 4,434,645, Cl. 72-402.000.
Novo Industri A/S: *See*—
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, 4,435,307, Cl. 252-174.120.
Novotny, Laszlo: *See*—
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.
Nozaki, Takao: *See*—
Ito, Takashi; and Nozaki, Takao, 4,435,447, Cl. 427-94.000.
Nozaki, Tetsuo: *See*—
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.
Nozawa, Ryoichiro; and Kiya, Nobuyuki, to Fujitsu Fanuc Limited. System for numerically controlling a machine tool. 4,435,771, Cl. 364-474.000.
Nozawa, Takamitsu: *See*—
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Numata, Koji: *See*—
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Nunnerich, Wilhelm; and Schmidt, Peter. Winding-on device for paper sheets and lengths of textile. 4,434,950, Cl. 242-67.200.
Nunokawa, Kazuo, to Tokyo Kogaku Kikai Kabushiki Kaisha. Working distance detecting device for ophthalmic apparatus. 4,435,051, Cl. 351-208.000.
Nutz, Karl-Diether, to Telefunken electronic GmbH. Zero voltage switch. 4,435,651, Cl. 307-252.0UA.
Nyby Uddeholm Powder Aktiebolag: *See*—
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., 4,435,483, Cl. 428-566.000.
Nyitrai, Jozsef: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
O & K Orenstein & Koppel Aktiengesellschaft: *See*—
Behrend, Volkmar; and Roder, Eckhard, 4,435,118, Cl. 414-744.00R.
Obata, Haruyuki: *See*—
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.
Obata, Tokio: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Obayashi, Hideki: *See*—
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Oberkirch, Wolfgang: *See*—
Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, 4,435,465, Cl. 428-195.000.
Oberlander, Charles N., to Mishkin, Ronald H.; Pappas, James T.; and Quast, W. Patrick, part interest to each. Transposable sheet music. 4,434,698, Cl. 84-483.00A.
Obo Bettermann OHG, Firma: *See*—
Jordan, Ernst G., 4,435,630, Cl. 219-98.000.
Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,435,017, Cl. 299-19.000.
Oce-Nederland B.V.: *See*—
de Putter, Jan A.; and Tummers, Paul J. H., 4,435,493, Cl. 430-87.000.
Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., 4,435,067, Cl. 355-3.0TR.
Ochii, Kiyofumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device with dummy word line/sense amplifier activation. 4,435,793, Cl. 365-233.000.
Ochsner, Paul A.: *See*—
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,435,585, Cl. 549-446.000.

O'Donnell & Associates Inc.: *See*—
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., 4,434,840, Cl. 165-82.000.
O'Donnell, William J.: *See*—
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., 4,434,840, Cl. 165-82.000.
Oehy, Peter, to Rieter Machine Works, Ltd. Apparatus and method for depositing textile fiber sliver. 4,434,532, Cl. 19-159.00R.
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, to Degussa Aktiengesellschaft. Process for the recovery of pure hellebrin. 4,435,563, Cl. 536-18.100.
Oestreich, Ulrich, to Siemens Aktiengesellschaft. Pipe store for SZ stranding. 4,434,610, Cl. 57-294.000.
Office National d'Etudes et de Recherches Aerospatiales: *See*—
Taillet, Joseph; and Larigaldie, Serge, 4,435,190, Cl. 55-5.000.
Officine Riunite Udine Spa: *See*—
Del Fabbro, Dino, 4,435,081, Cl. 366-18.000.
Ogata, Masaru; and Sato, Kosaburo, to Shionogi & Co., Ltd. 3-Sulfonamido-benzophenonimine derivatives useful for treating virus infections. 4,435,394, Cl. 424-248.500.
Ogawa, Goro, to Nakagawa, Seisakusho Co., Ltd. High draft apparatus for worsted spinning process. 4,434,533, Cl. 19-247.000.
Ogawa, Riichi: *See*—
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Ogawa, Tadashi: *See*—
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, 4,435,503, Cl. 430-548.000.
Ogden Industries Pty. Limited: *See*—
Dunphy, Gerald F.; and Best, Lance E., 4,434,634, Cl. 70-89.000.
Ogihara, Yutaka: *See*—
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,435,657, Cl. 307-516.000.
O'Gorman, Michael C. Controlled fireplaces for concurrently varying combustion air and convected air. 4,434,783, Cl. 126-121.000.
Ohmori, Motoji: *See*—
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.
Ohneck, Robert J.: *See*—
Kirk, James L.; and Ohneck, Robert J., 4,435,292, Cl. 210-747.000.
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, to Maruko Seiyaku Co., Ltd. Thiopyranopyrimidine compounds and acid addition salts thereof. 4,435,566, Cl. 544-117.000.
Ohrberg, Carl V.; and Hansen, Gunnar L., to Danfoss A/S. Hydraulic planetary piston engine having free wheeling valve. 4,435,130, Cl. 417-310.000.
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, to Sony Corporation. Conductive paste. 4,435,611, Cl. 174-68.500.
Ohta, Kazutoshi; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Electric elevator car driving device. 4,434,873, Cl. 187-28.000.
Ohta, Mitsuru: *See*—
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.
Ohta, Yasuto: *See*—
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.
Ohtani, Iwao: *See*—
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.
Oilgear Company, The: *See*—
Murdoch, Ian G., 4,434,811, Cl. 137-515.000.
Okabe, Kanichi: *See*—
Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, 4,435,830, Cl. 378-197.000.
Okada, Akio; Nakata, Tokifumi; and Nemoto, Kiyoshi. Flow control valve. 4,435,134, Cl. 417-428.000.
Okada, Masanori: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Okamoto, Harunori: *See*—
Inae, Shoji; and Okamoto, Harunori, 4,435,236, Cl. 156-132.000.
Okamoto, Kazuo: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.
Okamoto, Tetsuro: *See*—
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.
Okawa, Nobuo: *See*—
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, 4,435,212, Cl. 75-124.000.
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, to Hitachi, Ltd. Sorting apparatus. 4,435,285, Cl. 209-250.000.
Oku, Teruo: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.
Okubo, Kiyokazu, to Honda Giken Kogyo Kabushiki Kaisha. Clutch mechanism for power transmission system. 4,434,878, Cl. 192-48.920.
Okubo, Takeshi: *See*—
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.
Okuda, Ryoichi: *See*—
Yamamoto, Norboru; Makino, Tomoatsu; and Okuda, Ryoichi, 4,434,779, Cl. 123-609.000.
Okutani, Shigeaki: *See*—
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, to Fuji Photo Film Co., Ltd. Method for developing silver halide photographic light-sensitive material. 4,435,500, Cl. 430-419.000.
Olesen, Russell, to Puritan-Bennett Corporation. Vaporizer subsystem for an anesthesia machine. 4,434,790, Cl. 128-200.140.
Olin Corporation: *See*—
Deininger, J. Paul, 4,435,256, Cl. 204-86.000.
Deininger, J. Paul; and Dotson, Ronald L., 4,435,257, Cl. 204-86.000.
Kadija, Igor V., 4,435,252, Cl. 204-11.000.
Sevier, Peter E., 4,434,838, Cl. 164-485.000.
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, to SKF Kugellagerfabriken GmbH. Clutch release bearing. 4,434,882, Cl. 192-98.000.
Olschewski, Armin: *See*—
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, 4,434,640, Cl. 72-348.000.
Olsen, Roy W.; and Bell, Curtis H., to Goodyear Tire & Rubber Company, The. Method for making a hose having an index mark. 4,435,352, Cl. 264-504.000.
Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., to Dow Chemical Company, The. Process for treating chlorinated hydrocarbons. 4,435,379, Cl. 423-472.000.
Olson, Wayne L.: *See*—
Schmidt, Terrance L.; and Olson, Wayne L., 4,434,536, Cl. 24-241.0PP.
Olympus Optical Co., Ltd.: *See*—
Furuta, Kenji, 4,435,735, Cl. 360-74.400.
Horikawa, Yoshiaki; and Imai, Toshihiro, 4,435,049, Cl. 350-454.000.
Imai, Youg, 4,435,702, Cl. 340-671.000.
Tanikawa, Kowji, 4,435,056, Cl. 354-21.000.
OMI International Corporation: *See*—
Baker, Kenneth D.; and Scheider, Hans, 4,435,253, Cl. 204-43.00G.
Omodei-Sale', Amedeo: *See*—
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, 4,435,417, Cl. 424-273.00B.
Omori, Hiroyuki: *See*—
Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, 4,435,251, Cl. 203-50.000.
O'Neill, John H., Jr.: *See*—
McCollough, John K., Jr.; and O'Neill, John H., Jr., 4,434,632, Cl. 68-205.00R.
Opeka, Joze: *See*—
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.
Oppeniaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., to BASF Aktiengesellschaft. Ammonium salts of polymaleic acids, and their use as corrosion inhibitors in mineral oils. 4,435,298, Cl. 252-34.000.
Orstad, Durwood D.: *See*—
Orstad, Russell D.; and Orstad, Durwood D., 4,435,115, Cl. 414-490.000.
Orstad, Russell D.; and Orstad, Durwood D. Dolly for lifting and carrying dead sows and the like. 4,435,115, Cl. 414-490.000.
Ortho Diagnostic Systems Inc.: *See*—
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,435,293, Cl. 210-772.000.
Osagawa, Takao: *See*—
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.
Osaka Gas Co., Ltd.: *See*—
Ishimaru, Kimio; and Abe, Kenichi, 4,435,629, Cl. 219-10.55A.
Osaki, Tatsuo, to Yoshida Kogyo K.K. Bottom stop applying and gapping apparatus for a slide fastener chain. 4,434,538, Cl. 29-33.200.
Osawa, Masayuki: *See*—
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.
Oscar Mayer Foods Corporation: *See*—
Jensen, Ronald W., 4,434,529, Cl. 17-49.000.
Osterberg, Arnold C.: *See*—
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., 4,435,419, Cl. 424-274.000.
Otake, Katsumoto: *See*—
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.
Otis Elevator Company: *See*—
Kettle, John L., 4,434,884, Cl. 198-328.000.
Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, to Honda Motor Co., Ltd. Deceleration fuel cut device for internal combustion engines. 4,434,769, Cl. 123-493.000.
Otsuka, Kazuo: *See*—
Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, 4,434,764, Cl. 123-440.000.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, 4,435,404, Cl. 424-258.000.
Ott, Richrd B., to National Presto Industries, Inc. Pressure cooker interlock. 4,434,909, Cl. 220-316.000.
Ou, Sam A.; and Beair, Charles E., to BS&B Safety Systems, Inc. Rupturable low pressure relief apparatus. 4,434,905, Cl. 220-89.00A.
Ouki, Masami: *See*—
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.
Ovaert, Francis: *See*—
Renesult, Patrick; and Ovaert, Francis, 4,434,592, Cl. 52-145.000.
Ovshinsky, Stanford R.: *See*—
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.
Owens-Corning Fiberglas Corporation: *See*—
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., 4,434,946, Cl. 242-18.00G.
Varrasso, Eugene C., 4,435,811, Cl. 373-39.000.
Owens-Illinois, Inc.: *See*—
Weaver, Edward A., 4,435,511, Cl. 501-22.000.
Oxenrider, Bryce C.; and Long, David J., to Allied Corporation. Polycyclic pyromellitates and use thereof on polyesters and polyamides. 4,435,294, Cl. 252-8.600.
Pabst, Patrea L.; and Bing, David H., to Ionics, Incorporated. Electrodialysis preparation of purified AHF concentrate. 4,435,318, Cl. 260-112.00B.
Pace Incorporated: *See*—
Parker, Oscar E., 4,435,635, Cl. 219-227.000.
Pacini, Carlo: *See*—
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare, 4,434,612, Cl. 57-331.000.
Pacini, Cesare: *See*—
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare, 4,434,612, Cl. 57-331.000.
Paczuk, Laszlo: *See*—
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.
Pader, Morton, to Lever Brothers Company. Humectants for clear gel dentifrice compositions. 4,435,380, Cl. 424-49.000.
Paffrath, Gottfried: *See*—
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.
Page, Ronald W., to National Semiconductor Corporation. Video amplifier mute circuit. 4,435,684, Cl. 330-51.000.
Palenschat, Dieter: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Palitex Project Company GmbH: *See*—
Schacht, Dieter, 4,434,609, Cl. 57-58.860.
Palmer, Alan R.: *See*—
Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., 4,434,800, Cl. 128-665.000.
Palmeter, Charles W.: *See*—
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.
Paoli, Bruno, to International Paper Company. Transportation device, in particular for shaped, flexible material. 4,434,926, Cl. 226-172.000.
Pappas, James T.: *See*—
Oberlander, Charles N., 4,434,698, Cl. 84-483.00A.
Paranjpe, Suresh C.: *See*—
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.
Park, Jack H.: *See*—
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., 4,434,852, Cl. 166-273.000.
Parker-Hannifin Corporation: *See*—
Zajac, Theodore S., 4,434,966, Cl. 251-205.000.
Parker, Oscar E., to Pace Incorporated. Heat barrier for desolderer and heater assembly. 4,435,635, Cl. 219-227.000.
Parker, Phillip H.: *See*—
Woo, Gar L.; and Parker, Phillip H., 4,435,547, Cl. 525-420.000.
Parks, James A.: *See*—
Lee, Cheuk M.; and Parks, James A., 4,435,422, Cl. 424-285.000.
Parlman, Robert M.: *See*—
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., 4,435,304, Cl. 252-156.000.
Parrott, George A., to Dresser Europe S.A. Mineral winning machine for "in web" mining system. 4,435,018, Cl. 299-43.000.
Partin, Lee R.: *See*—
Agreda, Victor H.; and Partin, Lee R., 4,435,595, Cl. 560-234.000.
Pascal, Daniel; and Duret, Denis, to Commissariat a l'Energie Atomique. Process for the manufacture and adjustment of a Josephson effect magnetic flux pick-up. 4,434,547, Cl. 29-599.000.
Patmore, David J.: *See*—
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., 4,435,280, Cl. 208-112.000.
Paton, David: *See*—
Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, 4,435,429, Cl. 426-18.000.
Patrick, John P.: *See*—
Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., 4,435,647, Cl. 290-44.000.
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, to Gao Gesellschaft fur Automation and Organisation mbH. Method and means for determining the state and/or genuineness of flat articles. 4,435,834, Cl. 382-7.000.
Pauluhn Electric Manufacturing Co., Inc.: *See*—
Russo, Salvatore V., 4,435,744, Cl. 362-219.000.
Pav, Josef: *See*—
Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, 4,434,713, Cl. 100-168.000.
Pavincic, Ivan. Rotary piston engine. 4,434,751, Cl. 123-43.00B.
Payrhammer, Bernd; and Weinert, Volker, to AGFA-Gevaert Aktiengesellschaft. Color copier. 4,435,075, Cl. 355-35.000.
Peacock Investments (Proprietary) Limited: *See*—
Raubenheimer, Johann N., 4,434,519, Cl. 15-1.700.
Pearce, Robert J., to Commonwealth Scientific and Industrial Research Organization. Preparation of protein isolate from sunflower seed. 4,435,319, Cl. 260-123.500.
Pearce, Robert J.: *See*—
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Pearson, Arthur W. Marine trap sensing system. 4,434,575, Cl. 43-100.000.
Pease, Wilder F.: *See*—
Lamberti, Vincent; and Pease, Wilder F., 4,435,328, Cl. 260-400.000.
Peerless Machine & Tool Corporation: *See*—
Dempsey, Edmond N., 4,435,143, Cl. 425-150.000.
Peizo Electric Products, Inc.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,435,667, Cl. 310-367.000.
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., to Cities Service Co. Polymerization catalyst. 4,435,518, Cl. 502-107.000.
Pennington, B. Timothy: *See*—
Veazey, Richard L.; and Pennington, B. Timothy, 4,435,519, Cl. 502-107.000.
Pennwalt Corporation: *See*—
Kamens, Ernest R., 4,435,525, Cl. 521-92.000.
Leah, George R., 4,435,472, Cl. 428-333.000.
Pennzoil Company: *See*—
Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., 4,435,370, Cl. 423-158.000.
Pepin, Julien H. Boom axle. 4,434,994, Cl. 280-404.000.
Perkins, Noel; and Perkins, Thomas. Bird feeding device. 4,434,745, Cl. 119-51.00R.
Perkins, Thomas: *See*—
Perkins, Noel; and Perkins, Thomas, 4,434,745, Cl. 119-51.00R.
Perlman, Martin M.; and Filion, Andre Y., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Electret semiconductor solar cell. 4,435,610, Cl. 136-255.000.
Perry, Ralph A.; and Andrejasich, Raymond J., to Emhart Industries, Inc. Hydrocarbon sensor float. 4,434,650, Cl. 73-61.10R.
Peters, Rex B.: *See*—
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,434,654, Cl. 73-151.000.
Peterson, Arnold D., to Bendix Corporation, The. Speed sensor for an electromagnetic machine. 4,435,659, Cl. 310-68.00R.
Peterson, Robert R., to Barry Wright Corporation. Laminated bearing structures. 4,435,097, Cl. 384-221.000.
Peterson, William E.; and Thompson, Robert B., to Rockwell International Corporation. Electromagnetic acoustic transducer. 4,434,663, Cl. 73-643.000.
Petito, Ferdinand C.; and Klauber, Gerald, to United States of America, Army. Method of making rugged vidicon. 4,435,668, Cl. 313-388.000.
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare. False twist drafting device for continuous working of slubbings of textile materials. 4,434,612, Cl. 57-331.000.
Petre, Dominique: *See*—
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, 4,435,601, Cl. 568-430.000.
Petros, Andrew J., to Mesta Machine Company. Sealing arrangement for a rotatable member. 4,435,096, Cl. 384-147.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, to Schering, Aktiengesellschaft. 3β,7β,15α-Trihydroxy-5-androsten-17-one, its 3,15-dipivalate, and their preparation. 4,435,327, Cl. 260-397.500.
Pews, Richard G.: *See*—
Lysenko, Zenon; and Pews, Richard G., 4,435,573, Cl. 546-250.000.
Pfeiffer, Thomas J.: *See*—
Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,435,093, Cl. 374-129.000.
Pfizer Inc.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.
Campbell, Simon F.; and Plews, Rhona M., 4,435,401, Cl. 424-251.000.
Cue, Berkeley W., Jr.; and Moore, Bernard S., 4,435,578, Cl. 548-309.000.
LaMattina, John L.; and Lipinski, Christopher A., 4,435,396, Cl. 424-248.510.
Richardson, Kenneth; and Gymer, Geoffrey E., 4,435,399, Cl. 424-250.000.
Pfrommer, Bruno, to Textilma AG. Stitch forming device for knitting machines. 4,434,627, Cl. 66-120.000.
Phadnis, Shashikant P.: *See*—
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.

Pharmindustrie: *See*—
Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., 4,435,393, Cl. 424-246.000.
Le Fur, Gerard R.; and Renault, Christian L. A., 4,435,410, Cl. 424-267.000.
Philipp Holzmann AG: *See*—
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, 4,434,591, Cl. 52-73.000.
Phillips, Edward L., to Sybron Corporation. Electrically neutral non-permselective porous membrane. 4,435,262, Cl. 204-181.00C.
Phillips Petroleum Company: *See*—
Gomory, Paul L., 4,435,269, Cl. 208-8.00R.
Gray, Michael L., 4,435,198, Cl. 62-28.000.
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., 4,435,304, Cl. 252-156.000.
Mathis, Ronald D.; and Reed, Jerry O., 4,435,221, Cl. 134-2.000.
Porter, Randall A.; and Reed, Larry E., 4,435,376, Cl. 423-447.300.
Reed, Jerry O.; and Johnson, Timothy W., 4,435,222, Cl. 134-2.000.
Stewart, William S., 4,434,746, Cl. 122-448.00R.
Stewart, William S., 4,435,192, Cl. 55-19.000.
Wu, Yulin; and Zuech, Ernest A., 4,435,596, Cl. 562-481.000.
Phillips, Richard A.; and Haddad, Theodore A., to Foster Grant Corporation. Method of making an abrasion resistant coating on a solid substrate and articles produced thereby. 4,435,476, Cl. 428-412.000.
Picard, Claude; and Saint Martin, Bernard, to La Calhene. Circuit for ventilating and filtering the medium contained in a confinement enclosure. 4,435,194, Cl. 55-96.000.
Pielkenrood, Jacob, to Pielkenrood-Vinitex Beheer B.V. Multiphase separator. 4,435,196, Cl. 55-174.000.
Pielkenrood-Vinitex Beheer B.V.: *See*—
Pielkenrood, Jacob, 4,435,196, Cl. 55-174.000.
Pinder, Andrew C.: *See*—
Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., 4,434,800, Cl. 128-665.000.
Pinto, Patrick A.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
Piolt, Man-Nen-Hitsu Kabushiki Kaisha: *See*—
Murahara, Koichi, 4,435,099, Cl. 401-145.000.
Piscitelli, R. Amelia: *See*—
Brush, Robert W., Sr.; and Piscitelli, R. Amelia, 4,434,552, Cl. 29-876.000.
Pitchford, Edward J., to Rain Bird Sprinkler Mfg. Corp. Reaction drive sprinkler. 4,434,937, Cl. 239-230.000.
Pitney Bowes Inc.: *See*—
Chang, Mike S. H., 4,435,259, Cl. 204-159.130.
Pivoteau, Jean; and Durot, Jean-Pierre, to Vetrotex Saint-Gobain. Packaging for fragile, heavy and/or deformable products. 4,435,479, Cl. 428-542.800.
Plagge, Vernon L.; and Bhalla, Ranbir S., to North American Philips Electric Corp. Arc tube construction. 4,435,669, Cl. 313-634.000.
Plastics Engineering Company: *See*—
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,435,323, Cl. 548-473.000.
Pless, Janos: *See*—
Bauer, Wilfried; and Pless, Janos, 4,435,385, Cl. 424-177.000.
Plews, Rhona M.: *See*—
Campbell, Simon F.; and Plews, Rhona M., 4,435,401, Cl. 424-251.000.
Pleyers, Jozef J. A.: *See*—
Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., 4,435,067, Cl. 355-3.0TR.
Plough, Inc.: *See*—
Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., 4,434,896, Cl. 206-621.000.
Plume, Alan W., to A. W. Plume Limited. Electrical resistance furnaces. 4,435,819, Cl. 373-119.000.
Plumly, George W. Edge lighted sign. 4,435,743, Cl. 362-20.000.
Plunkett, John P.: *See*—
Kenny, Thomas C.; and Plunkett, John P., 4,435,185, Cl. 44-68.000.
Pneumo Corporation: *See*—
Meulendyk, John W., 4,435,133, Cl. 417-364.000
Poe, Ronald L.: *See*—
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.
Polaroid Corporation: *See*—
Cocco, Vincent L., 4,435,062, Cl. 354-303.000.
Poler, Stanley, to Lynell Medical Technology Inc. Intraocular lens. 4,434,515, Cl. 3-13.000.
Poler, Stanley. Contact lens assembly with haptic and method for making the same. 4,435,050, Cl. 351-160.00R.
Pollution Controls Industries, Inc.: *See*—
Curtis, Stanley F., 4,434,993, Cl. 280-402.000.
Polyloom Corporation of America: *See*—
Weisner, Carl S.; and Raynolds, David W., 4,435,141, Cl. 425-131.100.
Pomaro, Nicholas; Pomaro, Russell; and Stauffer, Louis. Quick disconnect battery installation and charging system. 4,435,486, Cl. 429-1.000.
Pomaro, Russell: *See*—
Pomaro, Nicholas; Pomaro, Russell; and Stauffer, Louis, 4,435,486, Cl. 429-1.000.
Ponzielli, Giuseppe, to Coulson Heel Inc. Process for manufacturing articles of foamed thermoplastic material and article produced thereby. 4,435,523, Cl. 521-51.000.
Popov, Vladimir I.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., to O'Donnell & Associates Inc. Expansion joint for reactor or heat exchanger. 4,434,840, Cl. 165-82.000.
Porter, Darrell D.: *See*—
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.
Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Fibrous carbon production. 4,435,376, Cl. 423-447.300.
Potain Poclain Materiel (P.P.M.): *See*—
Charles, Georges M., 4,434,972, Cl. 254-340.000.
Potash, Hanan, to Burroughs Corporation. Branch predicting computer. 4,435,756, Cl. 364-200.000.
Potkay, Eugene, to Western Electric Co., Inc. Exhaust system for a vapor deposition chamber. 4,435,199, Cl. 65-3.120.
Pouzoullic, Gerard: *See*—
Boudault, Robert; and Pouzoullic, Gerard, 4,435,682, Cl. 329-107.000.
Powell, Norman F., to Westinghouse Electric Corp. System for obscuring antenna sidelobe signals. 4,435,710, Cl. 343-18.00E.
Powers, Donald H., Jr., to Chomerics, Inc. Electromagnetic shielding. 4,434,541, Cl. 29-526.00R.
PPG Industries, Inc.: *See*—
Coleman, Charles R., 4,435,450, Cl. 427-385.500.
Das, Balbhadra; and Moore, L. Dow, 4,435,474, Cl. 428-391.000.
Greigger, Paul P., 4,435,219, Cl. 106-287.160.
Kaylo, Alan J.; and Castellucci, Nicholas T., 4,435,529, Cl. 523-426.000.
Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, 4,434,521, Cl. 15-230.110.
Tamosauskas, Albert E.; and Temple, Chester S., 4,435,473, Cl. 428-378.000.
Valko, Joseph T., 4,435,559, Cl. 528-73.000.
Prather, Joseph E.; Khalifa, Ramzl A.; and Wenzler, Peter B., to Edson Tool & Manufacturing Co., Inc. Self-locking hinged door cabinet and latch for the same. 4,435,027, Cl. 312-222.000.
President and Fellows of Harvard College: *See*—
Abernathy, Frederick H., 4,435,837, Cl. 382-41.000.
Preuss, Dieter: *See*—
Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, 4,434,713, Cl. 100-168.000.
Prevorsek, Dusan C.: *See*—
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.
Prewo, Karl M.; and Brennan, John J., to United Technologies Corporation. Compliant composite tubular liners of fiber reinforced glass/-glass-ceramic having utility as gun barrel liners. 4,435,455, Cl. 428-36.000.
Price, Richard H.: *See*—
Flaherty, Thomas; and Price, Richard H., 4,434,815, Cl. 138-97.000.
Prince, Ronald E.: *See*—
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,434,700, Cl. 89-34.000.
Procter & Gamble Company, The: *See*—
Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., 4,435,317, Cl. 252-547.000.
Pross, John W., Jr., to Singer Company, The. Clock control for digital computer. 4,435,757, Cl. 364-200.000.
Prunbauer, Kurt, to EVVA-Werk Spezialerzeugung von Zylinder-und Sicherheitsschlossern GmbH & Co. KG. Lock having a cylinder core and a housing. 4,434,636, Cl. 70-358.000.
Ptacnik, Jerry: *See*—
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.
Puritan-Bennett Corporation: *See*—
Olesen, Russell, 4,434,790, Cl. 128-200.140.
Putz, Peter: *See*—
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.
Quast, W. Patrick: *See*—
Oberlander, Charles N., 4,434,698, Cl. 84-483.00A.
Rahtz, Dieter: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Rain Bird Sprinkler Mfg. Corp.: *See*—
Pitchford, Edward J., 4,434,937, Cl. 239-230.000.
Raines, Charles D., to Horton Manufacturing Co., Inc. Device for shaft alignment in a clutch or brake assembly. 4,434,883, Cl. 192-110.00R.
Ralstin, Donald E., to Wells Electronics, Inc. Single piece carrier for integrated circuit devices. 4,435,724, Cl. 357-79.000.
Rampley, Neil, to Heath Manufacturing Company. Adjustable lock arrangement and method for making same. 4,435,105, Cl. 403-109.000.
Ramuz, Henri: *See*—
Krasso, Anna; and Ramuz, Henri, 4,435,406, Cl. 424-263.000.
Randklev, Ronald M., to Minnesota Mining and Manufacturing Company. Method and manufacture for applying and removal of orthodontic bracket. 4,435,160, Cl. 433-9.000.
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., to Canada, Her Majesty the Queen in right of, as represented by the

Minister of Energy. Hydrocracking of heavy hydrocarbon oils with high pitch conversion. 4,435,280, Cl. 208-112.000.

Rangert, Bo R.: *See—*
Nilsson, Ralph L.; and Rangert, Bo R., 4,434,756, Cl. 123-195.00R.

Rao, Krishna K.: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,435,521, Cl. 502-209.000.

Rapid Ring Co., Inc.: *See—*
Mauer, Richard L., 4,434,690, Cl. 83-13.000.

Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., to United States of America, Health and Human Services. Synthesis of ethyl-4(3'-methoxyphenyl)-1-methyl piperidine-3-carboxylate. 4,435,572, Cl. 546-228.000.

Rasmussen, Aaron P. Turret belt grinder. 4,434,584, Cl. 51-135.00R.

Rasmussen, Robert, to Industrial Parts Depot. Reverse forging or replacement grouser bars. 4,434,642, Cl. 72-356.000.

Rassak, Denis: *See—*
Dedenon, Jean-Marie; and Rassak, Denis, 4,435,188, Cl. 48-111.000.

Rataud, Jean E. M. A.: *See—*
Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., 4,435,393, Cl. 424-246.000.

Ratcliffe, David J., deceased (by Ratcliffe, Madli-Ann, executrix); Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., to Syntrex Incorporated. Word processing system. 4,435,776, Cl. 364-900.000.

Ratcliffe, Madli-Ann, executrix: *See—*
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Raubenheimer, Johann N., to Peacock Investments (Proprietary) Limited. Apparatus for cleaning submerged surfaces. 4,434,519, Cl. 15-1.700.

Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., to U.S. Philips Corporation. Field frequency-doubling circuit for a television signal. 4,435,728, Cl. 358-140.000.

Raychem Corporation: *See—*
Gurevich, Boris, 4,435,639, Cl. 219-544.000.

Raychem Pontoise S. A.: *See—*
Flot, Regis; and Zoppi, Michel, 4,435,454, Cl. 428-36.000.

Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, to Buck Chemisch-Technische Werke GmbH & Co. Process for the preparation of a smoke composition. 4,435,233, Cl. 149-44.000.

Raynal, Serge: *See—*
Lecolier, Serge; and Raynal, Serge, 4,435,312, Cl. 502-157.000.

Raynolds, David W.: *See—*
Weisner, Carl S.; and Raynolds, David W., 4,435,141, Cl. 425-131.100.

Raytheon Company: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.
Williamson, James; and Crete, Paul G., 4,435,847, Cl. 455-260.000.

RCA Corporation: *See—*
Bendell, Sidney L.; and Levine, Peter A., 4,435,730, Cl. 358-213.000.
Harwood, Leopold A.; and Shanley, Robert L., II, 4,435,729, Cl. 358-183.000.
Kipp, Ronald W., 4,435,709, Cl. 343-14.000.
Kipp, Ronald W., 4,435,712, Cl. 343-17.700.
Kirschner, Thomas F., 4,435,799, Cl. 369-77.200.
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., 4,435,731, Cl. 358-243.000.
Levin, Leonard J., 4,435,801, Cl. 369-275.000.

READY Tools, Inc.: *See—*
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., 4,434,644, Cl. 72-387.000.

Reap, James J., to Du Pont de Nemours, E. I., and Company. Herbicidal o-alkylsulfonyloxy- and o-alkylsulfonylaminobenzenesulfonamides. 4,435,205, Cl. 71-92.000.

Rearick, William A.: *See—*
Winch, Allen R.; and Rearick, William A., 4,434,633, Cl. 68-267.000.

Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleimschmit, Peter, to Degussa Aktiengesellschaft. Process for removing extractable substances from carbon black. 4,435,378, Cl. 423-461.000.

Redmond, Russell J.; and Hannula, Donald L., to American Hospital Supply Corporation. Catheter guide. 4,435,174, Cl. 604-174.000.

Reed, A. K.: *See—*
Goldberger, William; and Reed, A. K., 4,435,444, Cl. 427-49.000.

Reed, Jerry O.; and Johnson, Timothy W., to Phillips Petroleum Company. Process for cleaning metal surfaces of poly(arylene sulfide) deposits. 4,435,222, Cl. 134-2.000.

Reed, Jerry O.: *See—*
Mathis, Ronald D.; and Reed, Jerry O., 4,435,221, Cl. 134-2.000.

Reed, Larry E.: *See—*
Porter, Randall A.; and Reed, Larry E., 4,435,376, Cl. 423-447.300.

Rees, James D.: *See—*
Lama, William L.; and Rees, James D., 4,435,039, Cl. 350-96.250.

Reeves, John W., to Eastman Kodak Company. Photothermographic silver halide material and process. 4,435,499, Cl. 430-350.000.

Regie Nationale des Usines Renault: *See—*
Bascou, Jacques, 4,435,007, Cl. 292-268.000.

ReHeat AB: *See—*
Almqvist, Christer; and Lindahl, Lars, 4,434,643, Cl. 72-379.000.

Reichel, Curtis J., to BASF Wyandotte Corporation. Process for the preparation of polyether-ester polyols. 4,435,592, Cl. 560-91.000.

Reimers, George W.; and Khalafalla, Sanaa E., to United States of America, Interior. Concentrating and reclaiming magnetic fluids. 4,435,302, Cl. 252-62.510.

Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 1-phenyl-2-(1,2,4-triazol-1-yl)-prop-2-en-1-ones. 4,435,411, Cl. 424-269.000.

Renault, Christian L. A.: *See—*
Le Fur, Gerard R.; and Renault, Christian L. A., 4,435,410, Cl. 424-267.000.

Reneault, Patrick; and Ovaert, Francis, to SMAC Acieroid. Heat and sound insulating structure for boarding or other non-loadbearing wall. 4,434,592, Cl. 52-145.000.

Reponen, Voitto: *See—*
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Rescio, Giuseppe: *See—*
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.

Reubke, Karl-Julius, to Bayer Aktiengesellschaft. Process for the preparation of 1-alkylaminoanthraquinones. 4,435,324, Cl. 260-378.000.

Reyes, Jaime M.: *See—*
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.

Rheinisch-Westfalisches Elektrizitatswerk AG: *See—*
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.

Rhodes, Lawrence G.; and Carter, John W., to Superior Gear Box Company. Gear box for corn harvesting unit. 4,434,606, Cl. 56-106.000.

Rhone-Poulenc Agrochimie: *See—*
Rouy, Noel; and Dewilde, Francois, 4,435,577, Cl. 548-221.000.

Rhone-Poulenc Industries: *See—*
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, 4,435,601, Cl. 568-430.000.
Thomas, Maryvonne; and Grosbois, Jean, 4,435,308, Cl. 252-181.000.

Rib Loc (Hong Kong) Ltd.: *See—*
Menzel, Julian M., 4,435,460, Cl. 428-129.000.

Ribble, George W.: *See—*
Vann, Roy R.; Ribble, George W.; and George, R. Flint, 4,434,854, Cl. 166-386.000.

Ribi, Edgar E.; and Cantrell John L., to Ribi ImmunoChem Research, Inc. Refined detoxified endotoxin product. 4,435,386, Cl. 424-177.000.

Ribi ImmunoChem Research, Inc.: *See—*
Ribi, Edgar E.; and Cantrell John L., 4,435,386, Cl. 424-177.000.

Rice, Doris M.: *See—*
Dominquez, Richard J. G.; and Rice, Doris M., 4,435,349, Cl. 264-257.000.

Rice, William M.: *See—*
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.

Richardson, Charles P.: *See—*
Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., 4,435,713, Cl. 343-702.000.

Richardson, Kenneth; and Gymer, Geoffrey E., to Pfizer Inc. 2-Aryl-1-(imidazol-1-yl)-8-(4-piperazin-1-ylphenoxy) octan-2-ol antifungal agents. 4,435,399, Cl. 424-250.000.

Richardson Merrell Inc.: *See—*
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,435,571, Cl. 544-384.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Vinky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Ricketts, Thomas E., to Occidental Oil Shale, Inc. In situ oil shale retort with differing upper and lower void fractions. 4,435,017, Cl. 299-19.000.

Ricoh Company, Ltd.: *See—*
Horike, Masanori; and Ebi, Yutaka, 4,435,720, Cl. 346-75.000.
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, 4,435,074, Cl. 355-15.000.
Tsukada, Toshiji; and Morinaga, Kazuo, 4,435,064, Cl. 355-1.000.

Riebold, Elbert M. Air terminal guidance system. 4,435,694, Cl. 340-953.000.

Riediger, Craig W.; and Winzeler, James E., to Caterpillar Tractor Co. Planetary steering differential. 4,434,680, Cl. 74-682.000.

Rieter Machine Works, Ltd.: *See—*
Mondini, Giancarlo, 4,434,531, Cl. 19-99.000.
Oehy, Peter, 4,434,532, Cl. 19-159.00R.

Rilliet, Francois, to Dematex Development & Investment Establishment. Blood collection unit. 4,434,802, Cl. 128-764.000.

Riotte, Michel: *See—*
Louboutin, Robert; and Riotte, Michel, 4,435,286, Cl. 210-116.000.

Rippelmeyer, Dennis M., to Emerson Electric Co. Gas burner control system. 4,435,150, Cl. 431-46.000.

Risberg, Robert L., to Hobart Brothers Company. Three phase square wave welding power supply. 4,435,632, Cl. 219-130.510.

Ritter, Ernst: *See—*
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Rivkin, Eric M., to Liberty Carton Co. Adjustable wire tote for printed circuit boards. 4,434,899, Cl. 211-41.000.

Rivkin, Eric M., to Liberty Carton Co. Hinged container for relay racks. 4,435,028, Cl. 312-258.000.

Rizzi, John R., to International Business Machines Corporation. Register allocation system using recursive queuing during source code compilation. 4,435,753, Cl. 364-200.000.

Rizzi, Primo: *See*—
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, 4,435,325, Cl. 260-397.200.

Robert Bosch GmbH: *See*—
Buchschmid, Emil; Burkel, Rainer; Dasamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, 4,435,745, Cl. 363-21.000.
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, 4,434,586, Cl. 51-170.0PT.
Straubel, Max, 4,434,777, Cl. 123-568.000.
Willer, Armin; and Roderer, Herbert, 4,435,660, Cl. 310-70.00R.

Roberts, Victor C.; and Sainz, Antonio J., to National Research Development Corporation. Apparatus for transmitting and receiving sound. 4,434,669, Cl. 73-861.250.

Robertson, John M.: *See*—
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.

Rockwell International Corporation: *See*—
Colton, Russell F., 4,435,737, Cl. 361-280.000.
Erickson, Alan R., 4,435,683, Cl. 330-2.000.
Fechalos, William A.; and Stehman, Carl J., 4,435,620, Cl. 179-18.0EB.
Gergis, Isoris S.; and Lee, Wai-Tak P., 4,435,784, Cl. 365-8.000.
McKenzie, Robert W., 4,435,029, Cl. 312-320.000.
Peterson, William E.; and Thompson, Robert B., 4,434,663, Cl. 73-643.000.

Roder, Eckhard: *See*—
Behrend, Volkmar; and Roder, Eckhard, 4,435,118, Cl. 414-744.00R.

Roderer, Herbert: *See*—
Willer, Armin; and Roderer, Herbert, 4,435,660, Cl. 310-70.00R.

Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, to Messer Griesheim GmbH. Powder, especially metallic powder for marking workpieces. 4,434,935, Cl. 239-85.000.

Roellchen, Thomas A., to Ace Polymers, Inc. Supporting and spacing member for web material rolls. 4,435,463, Cl. 428-158.000.

Rogers, Jack S., to Milliken Research Corporation. Athletic support fabric. 4,435,467, Cl. 428-254.000.

Rogers, Norman H.; and Crimmin, Michael J., to Beecham Group p.l.c. 2-Halo-substituted monic acid A useful as antibacterial compounds. 4,435,583, Cl. 549-414.000.

Rogers, Ray L.: *See*—
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.

Rogstadius, John I. F. Pipe coupling. 4,434,809, Cl. 137-318.000.

Rohm and Haas Company: *See*—
Witiak, David, 4,435,539, Cl. 524-558.000.

Rokach, Joshua: *See*—
Belanger, Patrice C.; Williams, Haydn W. R.; and Rokach, Joshua, 4,435,579, Cl. 549-12.000.

Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, to Bayer Aktiengesellschaft. Process for the preparation of dimethyl succinylosuccinate, the disodium salt thereof, dianilinodihydroterephthalic acids, the dimethyl esters and salts thereof, and dianilinoterephthalic acids, and the dimethyl esters and salts thereof. 4,435,589, Cl. 560-48.000.

Roling, Paul V.: *See*—
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., 4,435,518, Cl. 502-107.000.

Rollex B.V.: *See*—
Roos, Johannes, 4,434,570, Cl. 40-617.000.

Rolls-Royce Incorporated: *See*—
Moritz, Robert R., 4,434,957, Cl. 244-35.00R.

Rolls-Royce Limited: *See*—
Willgoose, Kenneth, 4,434,835, Cl. 164-34.000.

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Centrifuge rotor having a closable windshield. 4,435,169, Cl. 494-20.000.

Romicon, Inc.: *See*—
Breslau, Barry R., 4,435,289, Cl. 210-637.000.

Ronchi, Achille U.: *See*—
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.

Roop, Michael R.; and Cook, Russell P., Sr. Rescue apparatus. 4,434,869, Cl. 182-10.000.

Roos, Johannes, to Rollex B.V. Advertising holder. 4,434,570, Cl. 40-617.000.

Roquet Jorda, Pedro. Introduced in the hydraulic actuation for the alternative movements of the swinging arms of petroleum extractor machines. 4,434,705, Cl. 91-50.000.

Rosaen, Borje O. Fluid flow meter. 4,434,670, Cl. 73-861.540.

Rose, John A.; and Dyer, Keith, to AMF Incorporated. Machine for top stitching. 4,434,730, Cl. 112-121.120.

Rose Manufacturing Company: *See*—
Schmidt, Terrance L.; and Olson, Wayne L., 4,434,536, Cl. 24-241.0PP.

Rosenberg, Steven L. Adjustable abduction device for treatment of metatarsus adductus. 4,434,792, Cl. 128-80.00R.

Rosenkrantz, Edward: *See*—
Rosenkrantz, Evelyn S.; and Rosenkrantz, Edward, 4,434,938, Cl. 239-274.000.

Rosenkrantz, Evelyn S.; and Rosenkrantz, Edward. Aroma system. 4,434,938, Cl. 239-274.000.

Roses, Henri. Indicator apparatus for indicating notes emitted by means of a musical instrument. 4,434,697, Cl. 84-454.000.

Ross, Ashley M.; and McKee, James A., to Fabrico Manufacturing Corp. Silo breather bag. 4,434,712, Cl. 99-646.00S.

Roth, Martin: *See*—
Muller, Beat; and Roth, Martin, 4,435,489, Cl. 430-17.000.

Rothbuhr, Lothar, to Degussa Aktiengesellschaft. Oxidative after-treatment of carbon black. 4,435,377, Cl. 423-460.000.

Rougeron, Michel; and Simon, Jacques, to Centre National d'Etudes Spatiales. Method of construction for a container with a symmetrical lobed structure and container constructed according to the said process. 4,434,958, Cl. 244-126.000.

Roussel Uclaf: *See*—
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, 4,435,325, Cl. 260-397.200.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,435,408, Cl. 424-263.000.

Rouy, Noel; and Dewilde, Francois, to Rhone-Poulenc Agrochimie. Process for the preparation of chlorinated derivatives of benzoxazolones. 4,435,577, Cl. 548-221.000.

Royel International Pty. Ltd.: *See*—
Royston, Alan L., 4,435,636, Cl. 219-230.000.

Royston, Alan L., to Royel International Pty. Ltd. Desoldering tool. 4,435,636, Cl. 219-230.000.

Rozner, Marvin J.; and Chapman, Arthur S., to United States of America, Army. Telescoping periscope. 4,434,702, Cl. 89-36.00L.

RTE Corporation: *See*—
Link, Edwin A.; and Mikulecky, Harvey W., 4,435,690, Cl. 335-37.000.

Ruben, Zorro. Linear fluid handling, rotary drive, mechanism. 4,435,131, Cl. 417-334.000.

Rubin, Steven M., to Bell Telephone Laboratories, Incorporated. Technique for extracting features from images. 4,435,856, Cl. 382-27.000.

Rudolf, Peter: *See*—
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Rudolph, Peter K. C., to Boeing Company, The. Airfoil flap assembly with flap track member. 4,434,959, Cl. 244-215.000.

Ruf, Ralph R.: *See*—
Gambino, Richard J.; and Ruf, Ralph R., 4,435,663, Cl. 310-306.000.

Ruhrchemie Aktiengesellschaft: *See*—
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.

Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, to Hilti Aktiengesellschaft. Hammer drill for performing rotary drilling or percussive drilling. 4,434,859, Cl. 173-48.000.

Rumpz, Raphael J. Automatic traffic control gate. 4,434,578, Cl. 49-49.000.

Runzheimer, Hans-Volker: *See*—
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.

Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, to S.A.R. S.p.A. Manually operated liquid dispensing pump. 4,434,916, Cl. 222-321.000.

Russell, Angus R. T., to Singer Company, The. Anti-spill device for sewing machine bobbin. 4,434,734, Cl. 112-181.000.

Russell, Pat, to Baxter Travenol Laboratories, Inc. Slide clamp including elevation stabilizer. 4,434,963, Cl. 251-7.000.

Russo, Salvatore V., to Pauluhn Electric Manufacturing Co., Inc. Explosion-proof fluorescent light fixture. 4,435,744, Cl. 362-219.000.

Ruttkowski, Lothar: *See*—
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.

Rutty, Edward C.: *See*—
Czerwinski, Frank G.; and Rutty, Edward C., 4,434,952, Cl. 242-107.000.

Ryan, Dennis M., to AMPEX Corporation. Adjusting apparatus. 4,434,686, Cl. 81-3.00R.

Ryan, Dennis M., to Ampex Corporation. Tape tensioning apparatus. 4,434,954, Cl. 242-189.000.

Ryder, Leonard B.: *See*—
Vieth, Wolf R.; and Ryder, Leonard B., 4,435,453, Cl. 428-35.000.

Ryobi Ltd.: *See*—
Ishii, Koji; and Honkawa, Yoshinori, 4,434,716, Cl. 101-142.000.

S.A.R. S.p.A.: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.

S. C. Johnson & Sons, Inc.: *See*—
Brugman, Martin; and Van Schaik, Herman, 4,434,885, Cl. 198-388.000.

S.N.E.C.M.A.: *See*—
Trottier, Jean-Pierre; and Jeandin, Michel, 4,435,360, Cl. 419-49.000.

Sachs, Helmut: *See*—
Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,434,935, Cl. 239-85.000.

Sachs-Systemtechnik GmbH: *See*—
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.
Sack Glastechnik GmbH: *See*—
Strauss, Gottfried; and Schumann, Horst, 4,434,582, Cl. 51-101.00R.
Sackett, Robert W.: *See*—
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.
Safet-Embamet Lethiax: *See*—
Groult, Jacques, 4,434,910, Cl. 220-358.000.
Sahara, Masayoshi: *See*—
Nakai, Masaaki; and Sahara, Masayoshi, 4,435,057, Cl. 354-426.000.
Saint Martin, Bernard: *See*—
Picard, Claude; and Saint Martin, Bernard, 4,435,194, Cl. 55-96.000.
St. Martin, Leo I., Jr., to H. D. Baumann Assoc., Ltd. Low flow control valve. 4,434,965, Cl. 251-121.000.
Sainz, Antonio J.: *See*—
Roberts, Victor C.; and Sainz, Antonio J., 4,434,669, Cl. 73-861.250.
Saito, Hiroshi: *See*—
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.
Saito, Motoyuki; and Hatanaka, Hideo, to Citizen Watch Co., Ltd. Electrical connection construction for electronic timepiece. 4,435,796, Cl. 368-321.000.
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, to Yoshino Kogyosho Co., Ltd. Trigger-actuated atomizer. 4,434,917, Cl. 222-383.000.
Saito, Tadashi: *See*—
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.
Saito, Yoshihisa: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.
Saitou, Teruo: *See*—
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, 4,435,350, Cl. 264-280.000.
Sakai, Teturou: *See*—
Nagao, Nobuya; and Sakai, Teturou, 4,435,725, Cl. 358-36.000.
Sakalay, Frederick E.: *See*—
Baum, Richard I.; and Sakalay, Frederick E., 4,435,759, Cl. 364-200.000.
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, to Sakamoto, Masahisa; Tamura, Yoshio; Sakamoto, Tadashi; and Kawamura, Hiroji. Synthetic resin material, particularly surface material for phonograph records with a photograph or picture. 4,435,802, Cl. 369-286.000.
Sakamoto, Seiichi: *See*—
Terauchi, Kiyoshi; and Sakamoto, Seiichi, 4,435,136, Cl. 418-55.000.
Sakamoto, Tadashi: *See*—
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, 4,435,802, Cl. 369-286.000.
Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, to Daikin Kogyo Co., Ltd. Cross-fin coil type heat exchanger. 4,434,844, Cl. 165-151.000.
Sakow, Hiroshi; and Kashioka, Seiji, to Hitachi, Ltd. Method and device for detecting the position of an object. 4,435,835, Cl. 382-8.000.
Sakuma, Osamu: *See*—
Sazuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.
Sakura, Yasuhiro, to Tokyo Electric Co., Ltd. Label feed control system. 4,434,911, Cl. 221-2.000.
Salge, Edward A.; and Horey, Leonard I., to Singer Company, The. Operation controller for an electronic sewing machine. 4,434,732, Cl. 112-158.00E.
Sampei, Tohru: *See*—
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.
Sanborn, David M.; and Blackshaw, Andrew L., to E-Tech, Inc. Method of manufacturing a heat exchanger. 4,434,539, Cl. 29-157.30V.
Sanden Corporation: *See*—
Terauchi, Kiyoshi; and Sakamoto, Seiichi, 4,435,136, Cl. 418-55.000.
Terauchi, Kiyoshi, 4,435,137, Cl. 418-55.000.
Sanders Associates, Inc.: *See*—
Marshall, William J., Jr.; and Brigham, Gerald A., 4,435,794, Cl. 367-155.000.
Sandoz Ltd.: *See*—
Bauer, Wilfried; and Plesa, Janos, 4,435,385, Cl. 424-177.000.
Sankyo Company, Limited: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Sano, Mizuka: *See*—
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.
Santhoff, Rose G. Handbag and belt carrier. 4,434,921, Cl. 224-253.000.
Sanwa Kagaku Kenkyusho Co. Ltd.: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Sanwa Kako Company, Limited: *See*—
Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, 4,435,346, Cl. 264-54.000.
Sardisco, John B.: *See*—
Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., 4,435,370, Cl. 423-158.000.
Sarli, Michael S.: *See*—
Derr, Walter R.; and Sarli, Michael S., 4,435,275, Cl. 208-89.000.
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, to Chugai Seiyaku Kabushiki Kaisha. Dibenzoxazepine derivative, and pharmaceutical composition comprising the same. 4,435,391, Cl. 424-244.000.
Sasakawa, Tomio, to Anritsu Electric Company Limited. Optical fiber connector with mutually engaging, oppositely tapered surfaces. 4,435,036, Cl. 350-96.200.
Sasaki, Isao: *See*—
Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, 4,435,540, Cl. 524-780.000.
Sasaki, Kazuo: *See*—
Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, 4,435,006, Cl. 285-119.000.
Sasaki, Takuya: *See*—
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Dielectric film. 4,435,475, Cl. 428-409.000.
Sasaya, Hideaki: *See*—
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,435,140, Cl. 418-259.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, to Eisai Co., Ltd.; and General Director of the Agency of Industrial Science and Technology, Seiichi Ishizaka. Anti-ulcer composition comprising terpenoid containing two functional groups and method of treating ulcers. 4,435,423, Cl. 424-318.000.
Sato, Kazuo: *See*—
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.
Sato, Kosaburo: *See*—
Ogata, Masaru; and Sato, Kosaburo, 4,435,394, Cl. 424-248.500.
Sato, Masamichi, to Fuji Photo Film Co., Ltd. Fixing apparatus for electrophotography. 4,435,069, Cl. 355-3.0FU.
Sato, Mitsuyoshi: *See*—
Morita, Akiyoshi; and Sato, Mitsuyoshi, 4,435,142, Cl. 425-145.000.
Sato, Naoki: *See*—
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.
Sato, Yoshimi, to Nissan Motor Co., Ltd. Leg protector of automotive vehicle. 4,434,999, Cl. 280-752.000.
Saunders, Norman J.: *See*—
Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., 4,434,927, Cl. 227-9.000.
Savas, Judith C.: *See*—
Batzold, John S.; and Savas, Judith C., 4,435,267, Cl. 204-284.000.
Savin Corporation: *See*—
Landa, Benzion, 4,435,068, Cl. 355-3.00R.
Sburlino, Roberto: *See*—
Bianchi, Giuseppe; and Sburlino, Roberto, 4,434,629, Cl. 68-13.00A.
Scarzella, Sergio. Emergency levelling device for a lift car. 4,434,875, Cl. 187-29.00R.
Schacht, Dieter, to Palitex Project Company GmbH. Yarn brake and process for tensioning at least two yarns in a textile yarn processing machine. 4,434,609, Cl. 57-58.860.
Schadlich, Fritz: *See*—
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, 4,434,586, Cl. 51-170.0PT.
Schafer, Hans: *See*—
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, 4,434,591, Cl. 52-73.000.
Schaper, Ulf-Armin: *See*—
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,435,315, Cl. 252-522.00R.
Scharf, Bernhard: *See*—
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.
Scharsig, Hans-Hermann, to Hobart Corporation. Food material slicing machine. 4,434,694, Cl. 83-411.00R.
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, to American Cyanamid Company. Poly-cation salts of bis (or tris) 4-O-polyhexose-thio-arylene sulfate derivatives. 4,435,387, Cl. 424-180.000.
Scheib, Thomas J.: *See*—
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Scheider, Hans: *See*—
Baker, Kenneth D.; and Scheider, Hans, 4,435,253, Cl. 204-43.00G.
Schenk, Heinrich: *See*—
Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, 4,435,773, Cl. 364-724.000.

Schering AG: *See*—
Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, 4,435,558, Cl. 528-45.000.

Schering Aktiengesellschaft: *See*—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, 4,435,327, Cl. 260-397.500.

Schering Corporation: *See*—
Ganguly, Ashit K.; Mallams, Allan K.; and Liu, Yi-Tsung, 4,435,388, Cl. 424-180.000.
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
McCombie, Stuart W., 4,435,413, Cl. 424-270.000.
Nafissi-Varchei, M. Mehdi, 4,435,398, Cl. 424-250.000.

Schiele, Werner: *See*—
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Schiessl, Alois: *See*—
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Schiffarth, Josef: *See*—
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Schiller, Norman H.; and Alfano, Robert R., to Hamamatsu Corporation. Apparatus and method for use in calibrating the time axis and intensity linearity of a streak camera. 4,435,727, Cl. 358-139.000.

Schirlin, Daniel: *See*—
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.

Schmidt, Manfred, to Erich Schultze KG. Maintenance and protection devices for cooling plants. 4,434,626, Cl. 62-470.000.

Schmidt, Peter: *See*—
Nunnerich, Wilhelm; and Schmidt, Peter, 4,434,950, Cl. 242-67.200.

Schmidt, Robert: *See*—
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, 4,435,208, Cl. 71-105.000.

Schmidt, Terrance L.; and Olson, Wayne L., to Rose Manufacturing Company. Locking snap hook. 4,434,536, Cl. 24-241.0PP.

Schmiechen, Ralph: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Schmitt, Oscar A.; Nedreski, Robert J.; and Karlson, Eskil. Dental technique training device. 4,435,163, Cl. 434-263.000.

Schnegg, Peter: *See*—
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,435,336, Cl. 260-508.000.

Schneider, Joachim U.: *See*—
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.

Schneider, Rainer: *See*—
Michaelis, Klaus-Peter; and Schneider, Rainer, 4,435,338, Cl. 260-929.000.

Schneider, Wolfgang, to Klein, Schanzlin & Becker Aktiengesellschaft. Centrifugal pump impeller with replaceable wear ring. 4,435,126, Cl. 416-186.00R.

Schoenmakers, Johannes J. M., to U.S. Philips Corporation. Magnetic-tape cassette. 4,434,955, Cl. 242-199.000.

Schoenwald, Justin P. Trigonometry visualizers and method of making same. 4,435,162, Cl. 434-215.000.

Scholz, Dieter: *See*—
Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, 4,434,859, Cl. 173-48.000.

Schrader, Hellmut. Film guide assembly. 4,435,054, Cl. 353-95.000.

Schrader, Lothar: *See*—
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, 4,435,789, Cl. 365-203.000.

Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., to Bayer Aktiengesellschaft. Mixtures of polycarbonate elastomers, containing hydrogenated dimeric fatty acid esters as condensed units, and polyolefines and, optionally, other polycarbonates. 4,435,544, Cl. 525-146.000.

Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, to Rheinisch-Westfalisches Elektrizitatswerk AG. Method of recovering boric acid from waste-water concentrates of nuclear plants. 4,435,184, Cl. 23-300.000.

Schudel, Peter: *See*—
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,435,585, Cl. 549-446.000.

Schultze-Gebhardt, Fritz: *See*—
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, 4,434,530, Cl. 19-0.460.

Schulz, Bernhard: *See*—
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.

Schulz, Ralf-Thilo: *See*—
Engelsberger, Ernst; and Schulz, Ralf-Thilo, 4,434,580, Cl. 49-502.000.

Schumacher, Ralf: *See*—
Struck, Carl-Heinz; and Schumacher, Ralf, 4,435,152, Cl. 431-170.000.

Schumann, Horst: *See*—
Strauss, Gottfried; and Schumann, Horst, 4,434,582, Cl. 51-101.00R.

Schurfeld, Armin: *See*—
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., to Eaton Corporation. Rectified AC frequency converter. 4,435,750, Cl. 363-177.000.

Schutze, Detlef-Ingo: *See*—
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.

Schwaab, Josef: *See*—
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Schwabe, Ulrich; and Jacobs, Erwin, to Siemens Aktiengesellschaft. Process for producing adjacent tubs implanted with dopant ions in the manufacture of LSI complementary MOS field effect transistors. 4,434,543, Cl. 29-576.00B.

Schwartz, Erich: *See*—
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.

Schwartz, Reinhard: *See*—
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Schwartz, Werner; and Fischer, Peter, to Metallgesellschaft Aktiengesellschaft. Process of blowing high-oxygen gases into a molten bath which contains non-ferrous metals. 4,435,211, Cl. 75-62.000.

Schweizer, Hartmut: *See*—
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, 4,435,745, Cl. 363-21.000.

Schwerzel, Robert E.: *See*—
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., 4,435,828, Cl. 378-49.000.

SCM Corporation: *See*—
Cleveland, William E., 4,435,098, Cl. 400-674.000.

Scott, Edward W.; and Goetschel, Daniel B. Orchard error correction system. 4,435,807, Cl. 371-50.000.

Scott Paper Company: *See*—
Gray, Lorin S., III; and Doody, Jeffrey S., 4,435,461, Cl. 428-141.000.

Seaquist Valve Company: *See*—
Knickerbocker, Michael G., 4,435,135, Cl. 417-511.000.

Secretary of State in her Brtannic Majesty's Government of the United Kingdom: *See*—
Vogel, Alfredo, 4,434,839, Cl. 164-485.000.

SEDCO, Inc.: *See*—
Hampton, James E., 4,435,108, Cl. 405-209.000.

Sedivy, Jan K.: *See*—
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.

Sedlmair, Siegfried, to Siemens Aktiengesellschaft. Stripline microwave balanced mixer circuit. 4,435,848, Cl. 455-327.000.

Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, to U.S. Philips Corporation. Device for testing a circuit comprising sequential and combinatorial logic elements. 4,435,806, Cl. 371-25.000.

Seid, Gordon: *See*—
Cronin, Michael J.; and Seid, Gordon, 4,434,624, Cl. 62-172.000.

Seidelmann, Dieter: *See*—
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Seifried, Norbert: *See*—
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.

Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Recording apparatus with editing capability. 4,435,723, Cl. 346-154.000.

Seino, Kazuyuki: *See*—
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.

Seki, Fumio, to Yoshida Kogyo K K. Tape feeding device for stapling machines. 4,434,928, Cl. 227-16.000.

Selga, Marita Y.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Selman, Gordon L.: *See*—
Knapton, Arthur G.; and Selman, Gordon L., 4,435,373, Cl. 423-403.000.

Selva, Domenica: *See*—
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, 4,435,417, Cl. 424-273.00B.

Sepulveda, Luis F., to Challenger Caribbean Corporation; Challenger Products Corporation; and Commander Electrical Equipment, Inc. Lock off-lock on. 4,435,624, Cl. 200-42.00T.

Service de Propriete Indust. Centre de Recherches de Pont a Mousson: *See*—
Bacroix, Marcel A., 4,434,821, Cl. 141-44.000.

Servo, Matti; and Vainio, Matti, to Tamfelt Oy AB. Thermoplastic non-woven fabric seamed by melt-seaming and a method of making such a fabric. 4,435,457, Cl. 428-58.000.

Sevier, Peter E., to Olin Corporation. Apparatus and process for cooling and solidifying continuous or semi-continuously cast material. 4,434,838, Cl. 164-485.000.

Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Radiation sterilizable absorbable polymeric materials and methods for manufacturing the same. 4,435,590, Cl. 560-61.000.

Shanley, Robert L., II: *See*—
Harwood, Leopold A.; and Shanley, Robert L., II, 4,435,729, Cl. 358-183.000.

Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Record material carrying a color developer composition. 4,435,004, Cl. 282-27.500.

Shapiro, Justin J. Thermometer scale magnifier. 4,435,094, Cl. 374-191.000.

Sharp Kabushiki Kaisha: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,435,767, Cl. 364-405.000.
Tagawa, Takao; and Urakawa, Toshio, 4,435,733, Cl. 358-302.000.

Sharpe, Claude A.: *See*—
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.

Sheldon, William W.; and Axford, Theodore G., to Sheldon, William W. Retrieval of lobsters and other objects. 4,434,572, Cl. 43-6.500.

Shell Oil Company: *See*—
Graiff, L. B.; and Kiovsky, T. E., 4,435,187, Cl. 44-63.000.
Krijnen, Wilhelmus J.; and Grotenhuis, Paulus A. M., 4,435,582, Cl. 549-352.000.
Lewis, Robert M.; and Slaugh, Lynn H., 4,435,602, Cl. 568-470.000.

Shelton, Charles W.: *See*—
Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., 4,434,896, Cl. 206-621.000.

Shelton, Huey G.; and Zack, Leonard N., to Huey Company. Anti-snap device for drafting board tilting mechanism. 4,434,721, Cl. 108-4.000.

Shelvik, Bertrum S., to Eaton Corporation. Hold-down bracket for plug-in circuit breaker. 4,435,739, Cl. 361-346.000.

Sherwin, Owen W.: *See*—
Chapman, John A.; and Sherwin, Owen W., 4,434,936, Cl. 239-178.000.

Shevrin, Philip: *See*—
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Shideler, Jay A.; and Berry, Robert L., to Fairchild Camera & Instrument Corporation. Method of forming self-aligned lateral bipolar transistor. 4,435,225, Cl. 148-1.500.

Shiga, Motohiro: *See*—
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.

Shimano Industrial Company Limited: *See*—
Nakajima, Hideki, 4,434,951, Cl. 242-84.52B.
Shimano, Keizo, 4,434,679, Cl. 74-491.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Speed-change operating device for a bicycle. 4,434,679, Cl. 74-491.000.

Shimauchi Seiki Kabushiki Kaisha: *See*—
Chihara, Hiroyuki; and Kitano, Masuo, 4,435,089, Cl. 368-204.000.

Shimizu, Makoto: *See*—
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.

Shimizu, Masami; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Electrical circuit elements combination. 4,435,741, Cl. 361-401.000.

Shimizu, Michimasa: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Shimura, Takaki: *See*—
Miwa, Hirohide; and Shimura, Takaki, 4,434,661, Cl. 73-625.000.
Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, 4,434,658, Cl. 73-618.000.

Shin, Chung T.; and Geria, Navin, to Bristol-Myers Company. Anhydrous alcoholic antiperspirant suspension composition containing certain aluminum or aluminum/zirconium salt glycine complexes. 4,435,382, Cl. 424-66.000.

Shinagawa Refractories Co., Ltd.: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.

Shinji, Aoki: *See*—
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, 4,435,260, Cl. 204-164.000.

Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, to Hitachi, Ltd. FET Microwave oscillator being frequency stabilized by capacitive reactance micro-strip stub line. 4,435,688, Cl. 331-99.000.

Shinoda, Kazuichi; and Katayama, Masayoshi, to Tokico Ltd. Detector for use in measurement of flow speed or flow rate of a fluid. 4,434,668, Cl. 73-861.220.

Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, to Hitachi, Ltd. Vibration diagnosing method and apparatus for a rotary machine. 4,435,770, Cl. 364-508.000.

Shionogi & Co., Ltd.: *See*—
Ogata, Masaru; and Sato, Kosaburo, 4,435,394, Cl. 424-248.500.

Shiozaki, Tomoharu: *See*—
Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, 4,435,340, Cl. 264-4.700.

Shiraishi, Hideo: *See*—
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Shirakawa, Norio: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Shirase, Haruya; and Kondo, Takehisa, to Nissan Motor Co., Ltd. EGR Control system. 4,434,776, Cl. 123-568.000.

Shock, Gerald D.: *See*—
Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., 4,434,927, Cl. 227-9.000.

Showa Denko Kabushiki Kaisha: *See*—
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.

Shroff, James R.: *See*—
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,435,395, Cl. 424-248.500.

Sias, Roy C.: *See*—
Stokke, Olaf M.; and Sias, Roy C., 4,435,295, Cl. 252-8.55D.

Sieck, Reinhard; and Brusewitz, Gerhard, to Dr. Madaus & Co. Packaging container for sensitive products. 4,434,890, Cl. 206-443.000.

Siemens AG: *See*—
Taenzer, Jon C., 4,434,799, Cl. 128-660.000.

Siemens Aktiengesellschaft: *See*—
Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, 4,435,265, Cl. 204-198.000.
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, 4,435,789, Cl. 365-203.000.
Heynisch, Hinrich, 4,435,672, Cl. 315-366.000.
Oestreich, Ulrich, 4,434,610, Cl. 57-294.000.
Schwabe, Ulrich; and Jacobs, Erwin, 4,434,543, Cl. 29-576.00B.
Sedlmair, Siegfried, 4,435,848, Cl. 455-327.000.

Siemens Corporation: *See*—
Green, Philip S., 4,434,662, Cl. 73-641.000.

SIGMANKoncern: *See*—
Svercl, Josef; Novak, Jan; and Kalab, Zdenek, 4,434,645, Cl. 72-402.000.

Sikkenga, David L., to Standard Oil Company (Indiana). Continuous reactivation of AMS-1B-containing catalyst systems. 4,435,311, Cl. 502-22.000.

Silander, Torsten, to AB Tesi. Catheter. 4,434,797, Cl. 128-343.000.

Siler, Dan R.; and Trimble, Harold D., to Johnson Service Company. Apparatus for radiographic examination of pipe welds. 4,435,829, Cl. 378-60.000.

Silva, Adolfo E.: *See*—
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., 4,435,280, Cl. 208-112.000.

Silver, Alexander: *See*—
Gu, Alston L.; and Silver, Alexander, 4,435,839, Cl. 384-103.000.

Silver Seiko Ltd.: *See*—
Tsuzuki, Takashi, 4,434,628, Cl. 66-123.000.

Simandi, Laszlo: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Simay, Antal: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Simig, Gyula: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Simm, Manfred: *See*—
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.

Simon, Donald J.; and Field, Thomas R., to Jenn-Air Corporation. Electric range surface element. 4,435,638, Cl. 219-460.000.

Simon, Jacques: *See*—
Rougeron, Michel; and Simon, Jacques, 4,434,958, Cl. 244-126.000.

Simons, Leslie H.; and Alexander, David C., to Texaco Inc. Cobalt hydroformylation catalysts. 4,435,517, Cl. 502-74.000.

Simpson, Charles H. Hydrometallurgical process for extraction of nickel. 4,435,369, Cl. 423-147.000.

Singer Company, The: *See*—
Davidson, Donald R., 4,434,729, Cl. 112-121.120.
Kornatowski, Boleslaw, 4,434,880, Cl. 192-67.00R.
Pross, John W., Jr., 4,435,757, Cl. 364-200.000.
Russell, Angus R. T., 4,434,734, Cl. 112-181.000.
Salge, Edward A.; and Horey, Leonard I., 4,434,732, Cl. 112-158.00E.
Szostak, Jan; and Newman, Albert L., 4,434,736, Cl. 112-258.000.
Weisz, William, 4,434,733, Cl. 112-158.00A.

Siposs, George G.; and Christian, Jerry B., to Delta Medical Industries. Variable rate syringe pump for insulin delivery. 4,435,173, Cl. 609-155.000.

Sivachenko, Eugene W. Method and apparatus for severing corrugated metal products. 4,434,638, Cl. 72-130.000.

Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, to Merrell Toraude et Compagnie. Fluorinated diaminobutane derivatives. 4,435,425, Cl. 424-325.000.

SKF Kugellagerfabriken GmbH: *See*—
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, 4,434,640, Cl. 72-348.000.

Skinner, James R.; and Atwood, Robert G., to M.U. Engineering & Mfg., Inc. Disc package. 4,434,891, Cl. 206-444.000.
Slaugh, Lynn H.: *See*—
Lewis, Robert M.; and Slaugh, Lynn H., 4,435,602, Cl. 568-470.000.
Slomnicki, Israel. Ozone production system. 4,434,771, Cl. 123-539.000.
SMAC Acieroid: *See*—
Reneault, Patrick; and Ovaert, Francis, 4,434,592, Cl. 52-145.000.
Smelser, Bernard C. Water injection control valve. 4,434,748, Cl. 123-25.00L.
Smirnov, Boris A.: *See*—
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.
Smith, Dale A.: *See*—
Bellamy, David; and Smith, Dale A., 4,434,822, Cl. 141-98.000.
Smith, Darrell F., Jr.: *See*—
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,435,359, Cl. 419-3.000.
Smith, David W.: *See*—
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.
Smith, Donald J., to Communication Technology Corporation. Cable splice housing. 4,435,612, Cl. 174-92.000.
Smith, Herbert D.: *See*—
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., 4,435,240, Cl. 156-242.000.
Smith International, Inc.: *See*—
Garrett, William R., 4,434,863, Cl. 175-321.000.
Smith, John C., to International Telephone and Telegraph Corporation. Manufacturing process for a low loss optical fiber cable. 4,435,238, Cl. 156-171.000.
Smith, Michael B., to Standard Oil Company. Maximizing fracture extension in massive hydraulic fracturing. 4,434,848, Cl. 166-250.000.
Smith, Peter R.; and Coleman, Charles, to Statitrol, Inc. Method of making an improved pyroelectric sensor. 4,434,549, Cl. 29-832.000.
Smith, Raymond H. Magnetic jack. 4,434,968, Cl. 254-1.000.
Smith, Richard C.: *See*—
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.
Smith, Robert G. Tie down connector. 4,435,102, Cl. 403-206.000.
Smith, Roger D.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.
SmithKline Beckman Corporation: *See*—
Chow, Alfred W., 4,435,418, Cl. 424-273.00B.
Snaper, Alvin A. Fluidic matrix printer. 4,435,719, Cl. 346-75.000.
Snugli, Inc.: *See*—
Moore, Ann A., 4,434,920, Cl. 224-160.000.
Societe Anonyme de Telecommunications: *See*—
Durand, Alain, 4,435,224, Cl. 148-1.500.
Societe Anonyme dite: CERAVER: *See*—
Kaczerginski, Alexandre; and Willem, Michel, 4,435,615, Cl. 174-189.000.
Societe Anonyme dite: Sanofi: *See*—
Demarne, Henri; and Wagnon, Jean, 4,435,426, Cl. 424-324.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Hsu, Jau Y., 4,435,435, Cl. 426-557.000.
Societe Metallurgique Le Nickels-S.L.N.: *See*—
Cardini, Jean-Louis, 4,434,942, Cl. 241-21.000.
Societe Nationale des Poudres et Explosifs: *See*—
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Societe Nationale Elf Aquitaine (Production): *See*—
Favie, Claude; and Mercadier, Michel, 4,435,545, Cl. 525-344.000.
Societe Nouvelle de Roulements: *See*—
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Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See*—
Jaccard, Pierre-Ernest, 4,435,090, Cl. 368-320.000.
Sodeyama, Chuichi: *See*—
Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, 4,435,688, Cl. 331-99.000.
Soes, Lucas; and Ten Berge, Eduardus F. A., to AMP Incorporated. Connector for use in butt splicing two optical fibres. 4,435,038, Cl. 350-96.210.
Solar Turbines Incorporated: *See*—
Wosika, Leon R., 4,435,121, Cl. 415-56.000.
Solco Basel AG: *See*—
Laszczower, Max, 4,435,170, Cl. 604-4.000.
Solomon, Robert A.; and Dellinger, John J., to Am Fab, Inc. Tilt support for overbed table top and vertical lock assembly therefor. 4,434,722, Cl. 108-8.000.
Someshwar, Ashok H.: *See*—
Brantingham, George L.; and Someshwar, Ashok H., 4,435,775, Cl. 364-900.000.
Somezawa, Masashi: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.
Somfai, Eva: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.
Sonnerat, Claude, to Societe Nouvelle de Roulements. Gasket with metal mounting armature rotating between coaxial parts. 4,434,985, Cl. 277-37.000.
Sonnino-Goldman, Paula: *See*—
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.
Sonobe, Hiroshi: *See*—
Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, 4,435,594, Cl. 560-205.000.
Sony Corporation: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.
Sorbier, Pierre, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the production of molded members from elongated particles of wood. 4,435,347, Cl. 264-118.000.
Souchier, Alain: *See*—
Gill, George; Souchier, Alain; and Dorville, Georges, 4,434,614, Cl. 60-271.000.
Sowerwine, Owen D., to Castle & Cooke Techniculture. Support system for planting trays. 4,434,576, Cl. 47-39.000.
Soyka, Ron B.: *See*—
Jones, James B.; and Soyka, Ron B., 4,435,095, Cl. 374-194.000.
Specht, Steven J.: *See*—
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., 4,435,487, Cl. 429-70.000.
Specified Ceiling Systems: *See*—
McCall, Francis L., 4,434,599, Cl. 52-729.000.
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., to Sperry Corporation. Coherent spread spectrum receiving apparatus. 4,435,822, Cl. 375-1.000.
Sperry Corporation: *See*—
Campbell, Willis R., 4,434,607, Cl. 56-341.000.
Clark, John F., 4,435,707, Cl. 343-5.00W.
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., 4,435,822, Cl. 375-1.000.
Torok, Ernest J.; and Harvey, William A., 4,435,041, Cl. 350-162.240.
Spielau, Paul: *See*—
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Spieth, Manfred: *See*—
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Spilatro, Diane L.: *See*—
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., 4,435,300, Cl. 252-117.000.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Norbornyl esters and uses thereof in augmenting or enhancing the organoleptic properties of a consumable material and process for preparing same. 4,435,316, Cl. 252-522.00R.
Spriggs, Robert G., to Automated Optic, Inc. Apparatus adapted for automatic or semi-automatic fabrication of ultra-precision ophthalmic lenses, e.g., contact lenses. 4,434,581, Cl. 51-67.000.
Squaratti, Armand, to Lonza Ltd. Process for the production of 2-amino-4-methyl-benzothiazole. 4,435,576, Cl. 548-164.000.
Stabler, Manfred: *See*—
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, 4,434,586, Cl. 51-170.0PT.
Stahl, Charles R., to General Electric Company. Closed cycle gas turbine for gaseous production. 4,434,613, Cl. 60-39.070.
Stamicarbon B.V.: *See*—
Evens, Georges G., 4,435,552, Cl. 526-140.000.
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,435,314, Cl. 502-154.000.
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., 4,435,551, Cl. 526-101.000.
Stammler, Kurt: *See*—
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Standard Oil Company: *See*—
Smith, Michael B., 4,434,848, Cl. 166-250.000.
Standard Oil Company, (Indiana): *See*—
Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,435,282, Cl. 208-113.000.
Brannen, Cecil G.; and Hunt, Mack W., 4,435,301, Cl. 252-33.200.
Fields: Ellis K.; and Nimry, Tayseer S., 4,435,593, Cl. 560-119.000.
Sikkenga, David L., 4,435,311, Cl. 502-22.000.
Vasalos, Iacovos A., 4,435,281, Cl. 208-113.000.
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.
Standley, Paul M., to Dayco Corporation. Apparatus and method for making flexible load-carrying cord. 4,435,348, Cl. 264-174.000.
Stankowitz, James L. Applicator gun. 4,434,939, Cl. 239-345.000.
Stanley Works, The: *See*—
Czerwinski, Frank G.; and Rutty, Edward C., 4,434,952, Cl. 242-107.000.
Whitehouse, Hugh L., 4,434,858, Cl. 173-12.000.
Static, Inc.: *See*—
Testone, Anthony Q., 4,435,195, Cl. 55-126.000.
Statitrol, Inc.: *See*—
Smith, Peter R.; and Coleman, Charles, 4,434,549, Cl. 29-832.000.
Stattel, Raymond J.; and Niswander, James K., to United States of America, National Aeronautics and Space Administration. Memory-based parallel data output controller. 4,435,781, Cl. 364-900.000.
Staudenrausch, Georg; and Weerth, Hans-Ernst, to Albert Handtmann GmbH & Co. Sausage skin storage and feeder apparatus for a sausage stuffing machine. 4,434,527, Cl. 17-33.000.

Stauffer, Louis: *See*—
Pomaro, Nicholas; Pomaro, Russell; and Stauffer, Louis, 4,435,486, Cl. 429-1.000.
Steck, Edward J., to Wyoming Mineral Corporation. Barren solvent wash by oxidized raffinate acid in the process of uranium extraction from phosphoric acid. 4,435,367, Cl. 423-10.000.
Steeb, Dieter C. Stacked-plate heat exchanger. 4,434,845, Cl. 165-153.000.
Stegenga, Philip D.: *See*—
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Nortos, Robert L., 4,435,042, Cl. 350-281.000.
Stehman, Carl J.: *See*—
Fechalos, William A.; and Stehman, Carl J., 4,435,620, Cl. 179-18.0EB.
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Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.
Steinke, Kurt E.: *See*—
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Steklenski, David J.: *See*—
Lelental, Mark; and Steklenski, David J., 4,435,490, Cl. 430-45.000.
Stenkvist, Bjorn G. Process and device for preparation of cell samples for cytological tests. 4,435,507, Cl. 435-262.000.
Stenkvist, Sven-Einar, to ASEA Aktiebolag. DC Arc furnace component. 4,435,813, Cl. 373-72.000.
Stenzel, Otto; and Flecker, Pierre, to Leybold-Heraeus GmbH. Method and apparatus for monitoring the melting process in vacuum arc furnaces. 4,435,818, Cl. 373-104.000.
Stephen, John F.: *See*—
Kruse, Walter M.; and Stephen, John F., 4,435,586, Cl. 549-464.000.
Stern, Warren C., to Burroughs Wellcome Co. Treatment of minimal brain dysfunction (MBD). 4,435,449, Cl. 424-330.000.
Stevens, Emsley H., to Honeywell, Inc. Threshold voltage control network for integrated circuit field-effect trransistors. 4,435,652, Cl. 307-297.000.
Stevens, Reginald W., to International Computers Limited. Data transmission systems. 4,435,705, Cl. 340-825.050.
Stewart, William S., to Phillips Petroleum Company. Control of a system for supplying heat. 4,434,746, Cl. 122-448.00R.
Stewart, William S., to Phillips Petroleum Company. Control of a H_2S absorber. 4,435,192, Cl. 55-19.000.
Stieber, Harry C.: *See*—
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Stihl, Andreas: *See*—
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Stiles, Theodore R.: *See*—
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Stimpfig, Karl O.: *See*—
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Stirling, Irene; and Clarke, Brian P., to Beecham Group Limited. 9-Deoxy-9-amino-clavulanate antibacterial agents. 4,435,565, Cl. 542-416.000.
Stockmaster, Edward F.: *See*—
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Stoger, Klaus: *See*—
Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, 4,435,265, Cl. 204-198.000.
Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, to Bayer Aktiengesellschaft. Naphtholsulphonic acid compounds, their preparation and use as coupling components. 4,435,334, Cl. 260-501.120.
Stokke, Olaf M.; and Sias, Roy C., to Conoco Inc. Sulfonate for waterflooding. 4,435,295, Cl. 252-8.55D.
Stoll, Kurt. Cutter for flexible pipes. 4,434,555, Cl. 30-92.000.
Stopar, Miha: *See*—
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Stork, Karl: *See*—
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.
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van Mil, Martinus P. G., 4,434,526, Cl. 17-11.000.
Stower, Reinhard, to Compur-Electronic GmbH. Centrifuge. 4,435,167, Cl. 494-16.000.
Stradmann, Gunther: *See*—
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.
Straubel, Max, to Robert Bosch GmbH. Fuel supply apparatus for internal combustion engines. 4,434,777, Cl. 123-568.000.
Strauss, Gottfried; and Schumann, Horst, to Sack Glastechnik GmbH. Glass trimming cutter with roller conveyor. 4,434,582, Cl. 51-101.00R.
Streaty, Charles E., Jr.: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.
Strohl, John: *See*—
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Strong, Hovey R., Jr.: *See*—
Lorie, Raymond A.; and Strong, Hovey R., Jr., 4,435,758, Cl. 364-200.000.
Struck, Carl-Heinz; and Schumacher, Ralf, to Dr. C. Otto & Comp. GmbH. Apparatus for improving the flow of gases to a combustion chamber of a coke oven or the like. 4,435,152, Cl. 431-170.000.
Stryjewski, Walter A., to Eastman Kodak Company. Flash fusing apparatus. 4,435,633, Cl. 219-216.000.
Studsvik Energiteknik AB: *See*—
Johansson, Lars O., 4,435,356, Cl. 376-216.000.
Sturm, Budd H., to Goodyear Tire & Rubber Company, The. Paranitrodiphenylamine synthesis. 4,435,599, Cl. 564-433.000.
Suchy, Milos: *See*—
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Suenaga, Eiichi: *See*—
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Suga, Michihisa: *See*—
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Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, to Matsumoto Seiyaku Kogyo Kabushiki Kaisha. Process for producing silicon isocyanate compounds. 4,435,587, Cl. 556-410.000.
Sugiyama, Minoru; and Kaneko, Shinji, to Tokico Ltd. Ball joint. 4,435,101, Cl. 403-122.000.
Sugizaki, Shigeru: *See*—
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.
Suh Won America, Inc.: *See*—
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Sukejima, Hajime: *See*—
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.
Sullivan, Carl M.; and Kelley, Mellis M., to Goodyear Tire & Rubber Company, The. Process for the production of polyester copolymers. 4,435,562, Cl. 528-272.000.
Sulzer Brothers Ltd.: *See*—
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Sumimoto, Morio, to Kabushiki Kaisha Sumimoto Kagaku Kenkyusho. Apparatus for filtration of lubricating oil for an internal combustion engine. 4,435,287, Cl. 210-131.000.
Sumitomo Chemical Co., Ltd.: *See*—
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, 4,435,350, Cl. 264-280.000.
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.
Sumitomo Electric Industries, Ltd.: *See*—
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.
Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., to United States of America, Army. Black powder flamespread tester. 4,434,655, Cl. 73-167.000.
Sun Microsystems, Inc.: *See*—
Bechtolsheim, Andreas, 4,435,792, Cl. 365-230.000.
Sundahl, James G.; and Broersma, Lester V., to Bell Helmets Inc. Bicyclists helmet with air flow and perspiration control. 4,434,514, Cl. 2-425.000.
Sundman, Frey: *See*—
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, 4,435,122, Cl. 415-121.00B.
Sundstrand Data Control, Inc.: *See*—
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,434,654, Cl. 73-151.000.
Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., to Texaco Inc. Alcohol fuels containing wear-inhibiting amounts of reaction products of amines and phosphate esters of phosphonic acids. 4,435,186, Cl. 44-53.000.
Sunouchi, Akio: *See*—
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., to Gould Inc. Primary battery system. 4,435,487, Cl. 429-70.000.
Superior Gear Box Company: *See*—
Rhodes, Lawrence G.; and Carter, John W., 4,434,606, Cl. 56-106.000.
Superior Graphite Co.: *See*—
Goldberger, William; and Reed, A. K., 4,435,444, Cl. 427-49.000.
Superior Handling Equipment, Inc.: *See*—
Mosely, John F.; and Austin, Stephen R., 4,435,113, Cl. 414-347.000.
Surjaatmadja, Jim B., to Halliburton Company. Hydraulic digital stepper actuator. 4,434,704, Cl. 91-25.000.
Surls, Joseph P., Jr.: *See*—
Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., 4,435,379, Cl. 423-472.000.
Suyama, Tsuneo: *See*—
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Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray apparatus. 4,435,830, Cl. 378-197.000.

Suzuki, Isao: *See*—
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Suzuki, Kazuhiro; and Takahashi, Toshikatsu, to Fuji Xerox Co., Ltd. Optical magnification enlargement type copying machine. 4,435,077, Cl. 355-51.000.

Suzuki, Masakazu: *See*—
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, 4,435,747, Cl. 363-25.000.

Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Complex type electrophotographic plate and electrophotographic method using the same. 4,435,492, Cl. 430-58.000.

Suzuki, Toshiaki: *See*—
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.

Suzuki, Yasuo: *See*—
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, 4,434,585, Cl. 51-166.00R.

Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, to Yokogawa Hokushin Electric Corp. Interactive graphic system. 4,435,772, Cl. 364-520.000.

Svenska Rotor Maskiner Aktiebolag: *See*—
Astberg, Ake, 4,435,139, Cl. 418-201.000.

Svercl, Josef; Novak, Jan; and Kalab, Zdenek, to SIGMANKoncern. Apparatus for the radial shaping of tubular articles. 4,434,645, Cl. 72-402.000.

Swander, Kenneth D., to Hadady Corp. Truck-mounted brake system for railway cars. 4,434,877, Cl. 188-52.000.

Swanson, Glen E.; and Garstick, Larry A., to Eaton Corporation. Axle wheel end assembly. 4,434,833, Cl. 152-417.000.

Sweeney, Lawrence J., to Franklin Steel Company. Traffic delineator. 4,435,107, Cl. 404-10.000.

Sweeney, William M.: *See*—
Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., 4,435,186, Cl. 44-53.000.

Sybron Corporation: *See*—
Phillips, Edward L., 4,435,262, Cl. 204-181.00C.

Syntrex Incorporated: *See*—
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Syva Company: *See*—
Zuk, Robert F.; and Litman, David J., 4,435,504, Cl. 435-7.000.

Szostak, Jan; and Newman, Albert L., to Singer Company, The. Strain controlled sewing machine mount. 4,434,736, Cl. 112-258.000.

T&N Materials Research Limited: *See*—
Atkinson, Alan W.; and Lancaster, Janet M., 4,435,235, Cl. 156-62.200.

Tachikawa, Kyoji; and Yoshida, Yuji, to National Research Institute for Metals. Process for producing NB_3SN superconducting wires. 4,435,228, Cl. 148-11.50Q.

Tacussel, Maurice. Process and installation for the remote control of a premises watch radar apparatus. 4,435,699, Cl. 340-539.000.

Taenzer, Jon C., to Siemens AG. Ultrasound apparatus for medical examinations. 4,434,799, Cl. 128-660.000.

Tagawa, Kenichi; and Iguchi, Takao, to Nippon Seiko Kabushiki Kaisha. Bearing cages for supporting and retaining roller elements in cylindrical roller bearings. 4,435,024, Cl. 308-217.000.

Tagawa, Takao; and Urakawa, Toshio, to Sharp Kabushiki Kaisha. Flying spot scanner for laser printer. 4,435,733, Cl. 358-302.000.

Taggart, Franklin K. Golfer's stance mat. 4,434,983, Cl. 273-187.00R.

Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Phase detector circuit. 4,435,657, Cl. 307-516.000.

Taiho Kogyo Co., Ltd.: *See*—
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,435,482, Cl. 428-553.000.

Taillardat, Jean: *See*—
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, 4,435,325, Cl. 260-397.200.

Taillet, Joseph; and Larigaldie, Serge, to Office National d'Etudes et de Recherches Aerospatiales. Method for separating particles in suspension in a gas. 4,435,190, Cl. 55-5.000.

Takacs, Istvan: *See*—
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Takada, Shunji: *See*—
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, 4,435,500, Cl. 430-419.000.

Takahara, Yoshimasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, to Hitachi, Ltd. Maleimide: aryloxy diamine resin composition and process for producing same. 4,435,560, Cl. 528-170.000.

Takahashi, Sankichi: *See*—
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.

Takahashi, Tokutaro: *See*—
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Takahashi, Toshikatsu: *See*—
Suzuki, Kazuhiro; and Takahashi, Toshikatsu, 4,435,077, Cl. 355-51.000.

Takahashi, Yukiharu, to Tokyo Shibaura Electric. Analog-digital converter. 4,435,697, Cl. 340-347.0AD.

Takamizawa, Minoru: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.

Takaoka, Yukihisa: *See*—
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,435,587, Cl. 556-410.000.

Takasumi, Masakazu: *See*—
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.

Takayanagi, Kiyoshi: *See*—
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, 4,435,212, Cl. 75-124.000.

Takeda Chemical Industries, Ltd.: *See*—
Nishimura, Susumu; and Nomura, Hiroaki, 4,435,569, Cl. 544-280.000.
Nishimura, Susumu; and Akimoto, Hiroshi, 4,435,570, Cl. 544-280.000.

Takeda, Hiroyuki: *See*—
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.

Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, to Mitsubishi Petrochemical Company Limited. Method for purification of 2-methyleneglutaronitrile. 4,435,251, Cl. 203-50.000.

Taken, Michael E.: *See*—
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.

Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, to Nissin Kogyo Kabushiki Kaisha. Vacuum type brake booster device for vehicular use. 4,434,707, Cl. 91-376.00R.

Takeuchi, Masaki: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Tamfelt Oy AB: *See*—
Servo, Matti; and Vainio, Matti, 4,435,457, Cl. 428-58.000.

Tamosauskas, Albert E.; and Temple, Chester S., to PPG Industries, Inc. Aqueous peroxide emulsion for use with glass fibers. 4,435,473, Cl. 428-378.000.

Tamura, Akira, to CKD Controls Limited. Gas flow rate control system. 4,434,933, Cl. 236-75.000.

Tamura, Hiroshi: *See*—
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.

Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, to Tamura, Shohei. Method for producing a carbon filament and derivatives thereof. 4,435,375, Cl. 423-439.000.

Tamura, Yoshio: *See*—
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, 4,435,802, Cl. 369-286.000.

Tan, Yoichi, to Fuji Xerox Co., Ltd. Sub-signal transmitting system. 4,435,804, Cl. 370-69.100.

Tanaka, Haruo: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.

Tanaka, Ryuichiro: *See*—
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Tanaka, Shikei: *See*—
Matui, Kunihiko; and Tanaka, Shikei, 4,435,653, Cl. 307-309.000.

Tanaka, Tatsuyoshi: *See*—
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, 4,435,404, Cl. 424-258.000.

Tang, Daniel K.: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.

Tanikawa, Kowji, to Olympus Optical Co., Ltd. Film feeding device. 4,435,056, Cl. 354-21.000.

Tanji, Tsuneo: *See*—
Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, 4,435,276, Cl. 208-96.000.

Tarabanov, Alexandr S.: *See*—
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Taratuta, Igor P.: *See*—
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.

Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Ion modulating electrode with improved transmission factor. 4,435,066, Cl. 355-3.0SC.

Tarumi, Noriyoshi: *See*—
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.

Tasai, Masaaki: *See*—
Hamane, Tokuhito; and Tasai, Masaaki, 4,434,945, Cl. 242-7.140.
Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,434,819, Cl. 140-92.100.

Tassie, Douglas P., to General Electric Company. Ammunition feeder. 4,434,699, Cl. 89-12.000.
Tate & Lyle Limited: *See—*
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.
Tatievskaya, Elena M.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.
Tatsunosuke, Masuda, to Dainippon Screen Mfg. Co., Ltd. Projected image positioning method and apparatus for photographic enlarger. 4,435,076, Cl. 355-41.000.
Taub, Stanley. Method and apparatus for cleaning disks containing encoded information. 4,435,798, Cl. 369-72.000.
Tawse, Ian S., to Gen-Tech, Inc. Axial air gap alternators/generators of modular construction. 4,435,662, Cl. 310-168.000.
Tazuma, James J.: *See—*
Frech, Kenneth J.; and Tazuma, James J., 4,435,371, Cl. 423-228.000.
Teich, Wesley W.: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.
Tektronix, Inc.: *See—*
Hauser, Max W., 4,435,655, Cl. 307-490.000.
Teledyne Industries, Inc.: *See—*
Barbeau, Dennis E., 4,434,621, Cl. 60-734.000.
Telefunken electronic GmbH: *See—*
Nutz, Karl-Diether, 4,435,651, Cl. 307-252.0UA.
Telegin, Vasily D.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.
Tellert, Rudy: *See—*
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Temple, Chester S.: *See—*
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Ten Berge, Eduardus F. A.: *See—*
Soes, Lucas; and Ten Berge, Eduardus F. A., 4,435,038, Cl. 350-96.210.
TenEyck, John D., to Kennecott Corp. Seamless ceramic fiber composite articles and method and apparatus for their production. 4,435,468, Cl. 428-285.000.
Tennessee Valley Authority: *See—*
Frazier, Alva W.; and Dillard, Ewell F., 4,435,372, Cl. 423-321.00R.
Teraji, Tsutomu: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.
Terasaki, Syuuzi: *See—*
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Terashima, Masaaki: *See—*
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Terashima, Tsuneo: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.
Terauchi, Kiyoshi; and Sakamoto, Seiichi, to Sanden Corporation. Orbiting piston type fluid displacement apparatus with shaft bearing and seal mechanisms. 4,435,136, Cl. 418-55.000.
Terauchi, Kiyoshi, to Sanden Corporation. Scroll-type fluid compressor with scroll stabilizing mechanism. 4,435,137, Cl. 418-55.000.
Terink, Johannes L.; and Brandon, Maurits J., to Cacaofabrik DeZaan B.V. Alkalized cocoa powders and foodstuffs containing such powders. 4,435,436, Cl. 426-631.000.
Testone, Anthony Q., to Static, Inc. Filter unit and ionizing unit combination. 4,435,195, Cl. 55-126.000.
Texaco Inc.: *See—*
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.
Cuscurida, Michael, 4,435,527, Cl. 521-173.000.
DuGue, Michael G.; and Valone, Frederick W., 4,435,361, Cl. 422-12.000.
Dominquez, Richard J. G.; and Rice, Doris M., 4,435,349, Cl. 264-257.000.
Haynes, Stewart, Jr.; and Mims, Donald S., 4,434,851, Cl. 166-272.000.
McCoy, David R., 4,434,850, Cl. 166-267.000.
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., 4,434,852, Cl. 166-273.000.
Simons, Leslie H.; and Alexander, David C., 4,435,517, Cl. 502-74.000.
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Texas Instruments Incorporated: *See—*
Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.
Brantingham, George L.; and Someshwar, Ashok H., 4,435,775, Cl. 364-900.000.
Chapman, Richard A., 4,435,785, Cl. 365-147.000.
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.
Kitagawa, Norihisa; and Asahi, Hiroji, 4,435,788, Cl. 365-185.000.
Trenkler, George; and Delagi, Richard G., 4,434,930, Cl. 228-118.000.
Winkelman, Wayne, 4,435,752, Cl. 364-200.000.
Textilma AG: *See—*
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Thaden, Robert C.: *See—*
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Thaker, Gautam H.: *See—*
Davis, Robert C.; and Thaker, Gautam H., 4,435,823, Cl. 375-14.000.
Thakkar, Narendra C., to International Jensen Incorporated. Fade control circuit for auxiliary amplifier. 4,435,833, Cl. 381-109.000.
Theiler, Richard F., to Armour Food Company. Method for inhibiting nitrosamine formation and eliminating surface charring during meat cooking. 4,435,433, Cl. 426-266.000.
Thieler, Wolfgang: *See—*
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.
Thiokol Corporation: *See—*
Bolner, Thomas E., 4,435,023, Cl. 308-2.00R.
Thomas, Dale C., to Xerox Corporation. Rms voltage controller. 4,435,677, Cl. 323-235.000.
Thomas, Daniel W.: *See—*
Cesark, Frank F.; and Thomas, Daniel W., 4,435,002, Cl. 282-27.500.
Thomas Industries Inc.: *See—*
Grubbs, Calvin E., 4,435,749, Cl. 363-58.000.
Thomas, John F., Jr.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.
Thomas, Maryvonne; and Grosbois, Jean, to Rhone-Poulenc Industries. Compositions based on aluminum hydroxychlorides. 4,435,308, Cl. 252-181.000.
Thomas, Richard D.: *See—*
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.
Thomas, Thomas J.: *See—*
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.
Thompson, Gerhard R.: *See—*
Kaufman, Dan R.; and Thompson, Gerhard R., 4,435,782, Cl. 364-716.000.
Thompson, John K.: *See—*
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., 4,434,644, Cl. 72-387.000.
Thompson, Robert B.: *See—*
Peterson, William E.; and Thompson, Robert B., 4,434,663, Cl. 73-643.000.
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, to Bayer Aktiengesellschaft. Use of zinc salts of mercaptobenzimidazole and dithiophosphoric acid esters for the preparation of nitrile rubber/polyvinyl chloride mixtures. 4,435,532, Cl. 524-92.000.
Thornber, Craig W.: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Throckmorton, Morford C.; and Lal, Joginder, to Goodyear Tire & Rubber Company, The. Process for nonaqueous dispersion polymerization of butadiene in the presence of carbonylated polymeric dispersing agents. 4,435,553, Cl. 526-201.000.
Tickle, Andrew C., to Fairchild Camera and Instrument Corporation. Self-refreshing memory cell. 4,435,786, Cl. 365-154.000.
Tickle, Andrew C.; and Vora, Madhukar B., to Fairchild Camera and Instrument Corporation. High speed, nonvolatile, electrically erasable memory cell and system. 4,435,790, Cl. 365-218.000.
Tiefenbacher, Hubert: *See—*
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.
Till, Reinhard: *See—*
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Timex Corporation: *See—*
Dorfman, Leonard M., 4,435,088, Cl. 368-88.000.
Timm, Horst; and Kruger, H. Eckard, to Blaupunkt-Werke GmbH. Automobile radio and tape cassette switching apparatus. 4,435,845, Cl. 455-228.000.
TMC Corporation: *See—*
Nitschko, Theodor, 4,434,997, Cl. 280-625.000.
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, to Gruppo Lepetit S.p.A. Antiinflammatory 3H-naphtho[1,2-d]imidazoles. 4,435,417, Cl. 424-273.00B.
Tokico Ltd.: *See—*
Aono, Masami, 4,435,020, Cl. 303-6.00C.
Hayashida, Yoshihiro, 4,435,019, Cl. 303-6.00A.
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.
Shinoda, Kazuichi; and Katayama, Masayoshi, 4,434,668, Cl. 73-861.220.
Sugiyama, Minoru; and Kaneko, Shinji, 4,435,101, Cl. 403-122.000.
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Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.
Tokyo Electric Co., Ltd.: *See*—
Sakura, Yasuhiro, 4,434,911, Cl. 221-2.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Nunokawa, Kazuo, 4,435,051, Cl. 351-208.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ando, Hideo; and Suzuki, Isao, 4,435,343, Cl. 264-22.000.
Heki, Hideaki, 4,435,644, Cl. 250-435.000.
Ikeda, Yoshio, 4,434,630, Cl. 68-18.00F.
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, 4,435,513, Cl. 501-96.000.
Matui, Kunihiko; and Tanaka, Shikei, 4,435,653, Cl. 307-309.000.
Nagao, Nobuya; and Sakai, Teturou, 4,435,725, Cl. 358-36.000.
Ochii, Kiyofumi, 4,435,793, Cl. 365-233.000.
Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, 4,435,830, Cl. 378-197.000.
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Tokyo Shibaura Electric: *See*—
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Tokyo Tatsuno Co., Ltd.: *See*—
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.
Tom McGuane Industries, Inc.: *See*—
Ludwig, George C., 4,434,761, Cl. 123-383.000.
Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., to Dow Chemical Company, The. Branched polyamidoamines. 4,435,548, Cl. 525-451.000.
Tomioka, Hiromi: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Tomooka, Keiji, to Hitachi, Ltd. Clock signal extracting circuit. 4,435,825, Cl. 375-113.000.
Tompkins, John W. Armored cattle guard. 4,434,975, Cl. 256-17.000.
Tomson, James M., to General Electric Company. Method for assembling dynamoelectric machine end shield parts. 4,434,545, Cl. 29-596.000.
Tomuro, Yasuta, to Mitsubishi Denki Kabushiki Kaisha. Phase inverter circuit. 4,435,656, Cl. 307-513.000.
Toriumi, Koshiro: *See*—
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.
Torok, Ernest J.; and Harvey, William A., to Sperry Corporation. Chromatic aberration correction in a multiwavelength light beam deflection system. 4,435,041, Cl. 350-162.240.
Torretta, Roberto: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.
Tower Systems, Inc.: *See*—
Kragh, Loren G., 4,435,339, Cl. 261-153.000.
Townsend, Peter K.: *See*—
Abramson, Edward A.; and Townsend, Peter K., 4,435,037, Cl. 350-96.200.
Toy, Stanley A. Retrievable boat trailer. 4,434,995, Cl. 280-414.100.
Toyo Engineering Corporation: *See*—
Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, 4,435,276, Cl. 208-96.000.
Toyo Kogyo Co., Ltd.: *See*—
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.
Toyo Rubber Industry Co., Ltd., The: *See*—
Uemura, Yukihisa, 4,434,831, Cl. 152-356.00R.
Toyoda Koki Kabushiki Kaisha: *See*—
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, 4,434,585, Cl. 51-166.00R.
Toyota Jidosha Kabushiki Kaisha: *See*—
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.
Iezuka, Isamu; and Nakano, Kazuo, 4,434,759, Cl. 123-325.000.
Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, 4,434,766, Cl. 123-472.000.
Morita, Akiyoshi; and Sato, Mitsuyoshi, 4,435,142, Cl. 425-145.000.
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Chiba, Masakazu; and Matsuoka, Fumio, 4,435,000, Cl. 280-806.000.
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,434,760, Cl. 123-339.000.
Tractel, S.A.: *See*—
Desplats, Andre, 4,434,973, Cl. 254-344.000.
Traeger, Joseph P. Heating furnace. 4,434,782, Cl. 126-77.000.
Trede, Wolfgang: *See*—
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.
Trefilarbed Drahtwerk Koln GmbH: *See*—
Hartmann, Helmut, 4,434,608, Cl. 57-58.520.
Trenkler, George; and Delagi, Richard G., to Texas Instruments Incorporated. Process for producing reinforced structural articles and articles produced thereby. 4,434,930, Cl. 228-118.000.
Tri Tool Inc.: *See*—
Nall, Lawson H.; and Miller, Richard, 4,434,689, Cl. 82-4.00C.
Trimble, Harold D.: *See*—
Siler, Dan R.; and Trimble, Harold D., 4,435,829, Cl. 378-60.000.
Trincia, Richard. Screwdriver with handle for storing bits. 4,434,828, Cl. 145-62.000.
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, to Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenj. Control circuit of a functional and therapeutic stimulator. 4,434,798, Cl. 128-421.000.
Trotman, Helen H.; and Trotman, Herbert H. Underbody cushioning and ventilating structure and general utility formed plastic sheet. 4,435,015, Cl. 297-453.000.
Trotman, Herbert H.: *See*—
Trotman, Helen H.; and Trotman, Herbert H., 4,435,015, Cl. 297-453.000.
Trottier, Jean-Pierre; and Jeandin, Michel, to A.R.M.I.N.E.S.; and S.N.E.C.M.A. Method of manufacturing metal pieces by casting and sintering of a metal alloy powder. 4,435,360, Cl. 419-49.000.
Tsang, Won-Tien; and van der Ziel, Jan P., to Bell Telephone Laboratories, Incorporated. Passively mode locked laser having a saturable absorber. 4,435,809, Cl. 372-49.000.
Tschudy, Donald B.; and Morrow, Charles R., to Hoover Company, The. Power transmission for a cleaner. 4,434,865, Cl. 180-19.00H.
Tsolis, Alexandros K.; and Mikroyannidis, Ioannis A. 4-Hydroxy-5-(substituted phosphinyl)ethyleneureas. 4,435,533, Cl. 524-106.000.
Tsoukalas, Skevos N.; and Andros, John H. Chemical formulation for reclaiming silk screens. 4,435,305, Cl. 252-158.000.
Tsuchida, Naoki: *See*—
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, 4,434,755, Cl. 123-195.00C.
Tsuge, Akihiko: *See*—
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, 4,435,513, Cl. 501-96.000.
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, to Sankyo Company, Limited; and Ube Industries, Limited. Aminopyrimidine derivatives, processes for their preparation, and fungicidal, insecticidal and acaricidal compositions containing them. 4,435,402, Cl. 424-251.000.
Tsukada, Toshiji; and Morinaga, Kazuo, to Ricoh Co., Ltd. Optical exposure unit for electrophotographic printing device. 4,435,064, Cl. 355-1.000.
Tsuzuki, Mitsuo; and Suga, Michihisa, to Nippon Electric Co., Ltd. Print head for an on-demand type ink-jet printer. 4,435,721, Cl. 346-140.00R.
Tsuzuki, Takashi, to Silver Seiko Ltd. Knitting needle assembly. 4,434,628, Cl. 66-123.000.
Tummers, Paul J. H.: *See*—
de Putter, Jan A.; and Tummers, Paul J. H., 4,435,493, Cl. 430-87.000.
Tuomaala, Jorma: *See*—
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, 4,435,122, Cl. 415-121.00B.
Tyler, Derek E.: *See*—
Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., 4,434,837, Cl. 164-468.000.
Tyszkiewicz, Theodore J.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,435,428, Cl. 426-3.000.
Ube Industries, Limited: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, to Fujitsu Limited. Bank interleaved vector processor having a fixed relationship between start timing signals. 4,435,765, Cl. 364-200.000.
Uchidoi, Masanori: *See*—
Shimizu, Masami; and Uchidoi, Masanori, 4,435,741, Cl. 361-401.000.
Uchimura, Kazuo: *See*—
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, 4,435,074, Cl. 355-15.000.
Ueda, Toshitaka: *See*—
Yoshii, Tsuneo; Ueda, Toshitaka; and Kuroda, Tsukasa, 4,435,522, Cl. 502-319.000.
Uemura, Shigehiro: *See*—
Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, 4,434,844, Cl. 165-151.000.
Uemura, Yukihisa, to Toyo Rubber Industry Co., Ltd., The. Tubeless tires for trucks and buses. 4,434,831, Cl. 152-356.00R.
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, to UBE Industries, Ltd. Method for polymerizing α-olefin. 4,435,550, Cl. 526-73.000.
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, to Furukawa Electric Company Ltd., The. High permeability alloy. 4,435,212, Cl. 75-124.000.
Ueyama, Sadao: *See*—
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

UMC Industries, Inc.: *See*—
Hunt, James W.; and Johnson, Raymond A., 4,434,931, Cl. 232-15.000.
Umemura, Kazuhiro: *See*—
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.
Umesaki, Shigeo: *See*—
Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, 4,434,769, Cl. 123-493.000.
Union Carbide Corporation: *See*—
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.
Belz, Herman M.; and Stieber, Harry C., 4,435,816, Cl. 373-91.000.
D'Silva, Themistocles D. J., 4,435,421, Cl. 424-277.000.
Union Oil Company of California: *See*—
Deering, Roland F.; and Duir, John H., 4,435,271, Cl. 208-11.00R.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See*—
Wood, Jill E. G., 4,434,651, Cl. 73-85.000.
United States Gypsum Company: *See*—
Baehr, Donald O., 4,435,183, Cl. 23-293.00R.
United States of America
Air Force: *See*—
Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., 4,435,810, Cl. 372-58.000.
Army: *See*—
Comeyne, Robert G., 4,434,560, Cl. 33-241.000.
Mariani, Elio; and Ballato, Arthur, 4,435,441, Cl. 427-10.000.
McDowell, Hunter L., 4,435,689, Cl. 333-81.00A.
Mon, George, 4,434,813, Cl. 137-829.000.
Petito, Ferdinand C.; and Klauber, Gerald, 4,435,668, Cl. 313-388.000.
Rozner, Marvin J.; and Chapman, Arthur S., 4,434,702, Cl. 89-36.00L.
Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., 4,434,655, Cl. 73-167.000.
Energy: *See*—
August, Charles; and Myers, Harry J., 4,434,667, Cl. 73-861.120.
Korenko, Michael K., 4,435,231, Cl. 148-12.0EA.
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., 4,434,660, Cl. 73-622.000.
Health and Human Services: *See*—
Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., 4,435,572, Cl. 546-228.000.
Zierdt, Charles H., 4,435,505, Cl. 435-34.000.
Interior: *See*—
Reimers, George W.; and Khalafalla, Sanaa E., 4,435,302, Cl. 252-62.510.
National Aeronautics and Space Administration: *See*—
Kurtz, George W.; and Bankston, Ben F., 4,434,659, Cl. 73-620.000.
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.
Stattel, Raymond J.; and Niswander, James K., 4,435,781, Cl. 364-900.000.
National Security Agency: *See*—
Williams, Richard P., 4,435,783, Cl. 365-5.000.
Navy: *See*—
Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., 4,434,927, Cl. 227-9.000.
Erickson, Lawrence F., 4,434,717, Cl. 102-210.000.
Fried, Lawrence, 4,435,045, Cl. 350-310.000.
Given, George R., Jr., 4,434,855, Cl. 169-37.000.
Woods, Robert L., 4,434,812, Cl. 137-829.000.
U.S. Philips Corporation: *See*—
Boudault, Robert; and Pouzoullic, Gerard, 4,435,682, Cl. 329-107.000.
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.
Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., 4,435,774, Cl. 364-726.000.
Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., 4,435,685, Cl. 330-261.000.
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, 4,435,200, Cl. 65-64.000.
Kness, Werner, 4,434,553, Cl. 30-34.100.
Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., 4,435,728, Cl. 358-140.000.
Schoenmakers, Johannes J. M., 4,434,955, Cl. 242-199.000.
Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, 4,435,806, Cl. 371-25.000.
Withers, Richard B., 4,435,462, Cl. 428-156.000.
U.S. Product Development Company: *See*—
Adell, Robert, 4,434,598, Cl. 52-716.000.
United Technologies Corporation: *See*—
Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., 4,435,647, Cl. 290-44.000.
Levine, Richard, 4,435,123, Cl. 416-95.000.
Prewo, Karl M.; and Brennan, John J., 4,435,455, Cl. 428-36.000.
Universal Instruments Corporation: *See*—
Yager, Glen E., 4,434,887, Cl. 198-391.000.
Universal Thread Grinding Company: *See*—
Linley, Francis M., Jr., 4,434,677, Cl. 74-409.000.
University of Nebraska, The Board of Regents of the: *See*—
Kumar, Pullatikurthi P., 4,434,789, Cl. 128-1.200.
University of Pittsburgh: *See*—
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,435,063, Cl. 354-315.000.
Unno, Kunihiko: *See*—
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, 4,434,585, Cl. 51-166.00R.
UOP Inc.: *See*—
Imai, Tamotsu, 4,435,607, Cl. 585-443.000.
Upeslacis, Janis: *See*—
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,435,387, Cl. 424-180.000.
Urakawa, Toshio: *See*—
Tagawa, Takao; and Urakawa, Toshio, 4,435,733, Cl. 358-302.000.
Urano, Susumu: *See*—
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Urata, Sigeru: *See*—
Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, 4,435,830, Cl. 378-197.000.
Usry, Gerald O., to General Electric Company. Through fault pressure filter for fault pressure relay. 4,434,814, Cl. 138-44.000.
USS Engineers and Consultants, Inc.: *See*—
Cappelli, Romano, 4,434,540, Cl. 29-402.110.
USV Pharmaceutical Corporation: *See*—
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,435,395, Cl. 424-248.500.
Utsumi, Noriyuki: *See*—
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.
Vaal Reefs Exploration and Mining Company Limited: *See*—
McKechnie, Ronald M. K., 4,434,876, Cl. 187-95.000.
Vainio, Matti: *See*—
Servo, Matti; and Vainio, Matti, 4,435,457, Cl. 428-58.000.
Valentine, Michael J. Telephone guard device. 4,435,623, Cl. 179-189.00R.
Valeo, Societe Anonyme: *See*—
Bertin, Patrice, 4,434,706, Cl. 91-375.00A.
Valko, Joseph T., to PPG Industries, Inc. β-Hydroxy urethane low temperature curing agents. 4,435,559, Cl. 528-73.000.
Valmont Industries, Inc.: *See*—
Chapman, John A.; and Sherwin, Owen W., 4,434,936, Cl. 239-178.000.
Valone, Frederick W.: *See*—
DaGue, Michael G.; and Valone, Frederick W., 4,435,361, Cl. 422-12.000.
Vamco Machine & Tool, Inc.: *See*—
Varisco, Mario, 4,434,924, Cl. 226-120.000.
Van Dam Machine Corporation of America: *See*—
Fardin, Carlos, 4,435,114, Cl. 414-330.000.
Van Bakel, Bernardus A. H.: *See*—
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.
Van Deberg, Walter H. Robotic manipulator. 4,435,116, Cl. 414-728.000.
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., to Stamicarbon B.V. Process of preparing a polymerization catalyst and preparation of ethylene polymers with this catalyst. 4,435,314, Cl. 502-154.000.
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., to Stamicarbon B.V. Process for the polymerization or copolymerization of ethylene with an improved supported chromium oxide type catalyst. 4,435,551, Cl. 526-101.000.
Vanderburg, Ralph W., to Axelson, Inc. Valve self-relieving seats. 4,434,967, Cl. 251-328.000.
van der Loo, Hendrikus W.: *See*—
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., 4,435,551, Cl. 526-101.000.
van der Ziel, Jan P.: *See*—
Tsang, Won-Tien; and van der Ziel, Jan P., 4,435,809, Cl. 372-49.000.
Vandigriff, John F. Automotive control circuit. 4,435,649, Cl. 307-10.0AT.
Vanier, Noel R., to Eastman Kodak Company. Use of ketal blocked quinones to reduce post-process D-min increase in positive redox dye-releasing image transfer systems. 4,435,502, Cl. 430-489.000.
Van Linthout, Luc K.: *See*—
de Brabander, Louis F.; and Van Linthout, Luc K., 4,435,078, Cl. 356-121.000.
van Mil, Martinus P. G., to Stork PMT BV. Device for separating and processing the gizzards of slaughtered poultry. 4,434,526, Cl. 17-11.000.
Vann, Roy R.; Ribble, George W.; and George, R. Flint, to Geo Vann, Inc. Pressure actuated vent assembly for slanted wellbores. 4,434,854, Cl. 166-386.000.
Van Patten, Frederic D. Viewing apparatus for a chimney. 4,434,784, Cl. 126-312.000.
Van Schaik, Herman: *See*—
Brugman, Martin; and Van Schaik, Herman, 4,434,885, Cl. 198-388.000.
Varisco, Mario, to Vamco Machine & Tool, Inc. Dual driven feed rolls for a punch press. 4,434,924, Cl. 226-120.000.
Varma, Ravi K., to E. R. Squibb & Sons, Inc. Intermediates useful in the preparation of 17,17-bis(substituted thio)androstenes. 4,435,326, Cl. 260-397.300.

Varrasso, Eugene C., to Owens-Corning Fiberglas Corporation. Current distribution for glass-melting furnaces. 4,435,811, Cl. 373-39.000.
VAS Corporation: *See*—
Hedberg, David J.; and Nilsson, C. Gary, 4,435,734, Cl. 358-335.000.
Vasalos, Iacovos A., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gas. 4,435,281, Cl. 208-113.000.
Vazquez, Gonzalo; and Akkerman, Neil H., to AVA International Corporation. Flow controlling apparatus. 4,434,847, Cl. 166-117.500.
Veazey, Richard L.; and Pennington, B. Timothy, to Cities Service Co. Novel catalyst composition. 4,435,519, Cl. 502-107.000.
VEB Kombinat Textima: *See*—
Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, 4,434,566, Cl. 38-8.000.
Veltkamp, John H.: *See*—
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.
Venture Innovations, Inc.: *See*—
House, Roy F., 4,435,217, Cl. 106-171.000.
House, Roy F., 4,435,309, Cl. 252-314.000.
House, Roy F., 4,435,564, Cl. 536-87.000.
Verdicchio, Robert J.: *See*—
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., 4,435,300, Cl. 252-117.000.
Verduijn, Johannes P.: *See*—
Koetsier, Wicher T.; and Verduijn, Johannes P., 4,435,608, Cl. 585-480.000.
Vereczkey, Endre: *See*—
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Vernay Laboratories, Inc.: *See*—
Atkinson, Gordon E., 4,434,810, Cl. 137-493.000.
Versace, Richard W.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
Verweij, Henrik: *See*—
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, 4,435,200, Cl. 65-64.000.
Vetrotex Saint-Gobain: *See*—
Pivoteau, Jean; and Durot, Jean-Pierre, 4,435,479, Cl. 428-542.800.
Veutgen, Hans-Jurgen: *See*—
Neuhauser, Hans J.; and Veutgen, Hans-Jurgen, 4,435,226, Cl. 148-3.000.
Vi-Tek Designs, Inc.: *See*—
Vickio, Anthony N., 4,434,687, Cl. 81-441.000.
Vickio, Anthony N., to Vi-Tek Designs, Inc. Damaged screw remover. 4,434,687, Cl. 81-441.000.
Videki, Edwin R., II: *See*—
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,435,762, Cl. 364-200.000.
Vieth, Wolf R.; and Ryder, Leonard B. Saturated preform and method for preparation thereof. 4,435,453, Cl. 428-35.000.
Vigneau, David L. Heat transfer device. 4,435,154, Cl. 431-328.000.
Vigneau, David L. Infra-red radiant burner. 4,435,155, Cl. 431-328.000.
Vigorelli Genova S.p.A.: *See*—
Giolitti, Nicolo, 4,434,735, Cl. 112-220.000.
Viragen, Inc.: *See*—
Warren, Stanley L., 4,435,384, Cl. 424-101.000.
Visky nee Gombos, Zsuzsanna: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Vitolin, Rasma O.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Vivola, Leo A.: *See*—
Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., 4,435,213, Cl. 75-249.000.
Voermans, Antonius B.: *See*—
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.
Vogel, Alfredo, to Secretary of State in her Britannic Majesty's Government of the United Kingdom. Process for producing metallic slurries. 4,434,839, Cl. 164-485.000.
Vogel, Hans-Henning: *See*—
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.
Voillot, Herve, to Creusot-Loire. Apparatus for conveying cylindrical objects such as ammunition. 4,434,701, Cl. 89-36.00K.
Voll, Manfred: *See*—
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.
Von Ruden, Dennis, to General Equipment Co. Rod and pipe pusher-puller apparatus. 4,434,969, Cl. 254-29.00R.
Vora, Madhukar B.: *See*—
Tickle, Andrew C.; and Vora, Madhukar B., 4,435,790, Cl. 365-218.000.
Vorres, Karl S., to Institute of Gas Technology. Fluidized bed gasifier or similar device for simultaneous classification of ash and unreacted coal. 4,435,364, Cl. 422-145.000.
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., to W. R. Grace & Co., Cryovac Division. Strapped wicketed bags packet. 4,434,895, Cl. 206-554.000.
Vsesojuzny Elektrotekhnickesky Institut Imeni V.I. Lenina: *See*—
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.
Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki: *See*—
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.
W. R. Grace & Co.: *See*—
Lin, Shiow-Ching, 4,435,549, Cl. 525-504.000.
W. R. Grace & Co., Cryovac Division: *See*—
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.
Wada, Hiroyuki: *See*—
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Wada, Kenichi, to Minolta Camera Kabushiki Kaisha. Electrographic developing apparatus with toner flow director. 4,435,065, Cl. 355-3.0DD.
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Honing head for high-speed operation. 4,434,588, Cl. 51-344.000.
Wagener, Klaus: *See*—
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Wagnon, Jean: *See*—
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Waitkus, Phillip A.: *See*—
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Wajima, Moloyo: *See*—
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.
Waldo, Paul D.: *See*—
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Walker, Gordon N., to Ciba-Geigy Corporation. Certain substituted β-oxo-α-carbamoylpyrroleropionitriles. 4,435,407, Cl. 424-263.000.
Walker, Hamilton. Rotary piston internal combustion engine. 4,434,757, Cl. 123-241.000.
Walker, Wolfram H., to Biotest-Serum-Institut GmbH. Blood bags with interconnecting system. 4,435,179, Cl. 604-410.000.
Wall, Colin J.: *See*—
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.
Wallace, Dean L. Towing hitch construction. 4,434,996, Cl. 280-504.000.
Wallick, Scott A.: *See*—
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Wallimann, Hans: *See*—
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Walls, John E.; and Duyal, Tulay, to American Hoechst Corporation. Photopolymer cleavage imaging system. 4,435,496, Cl. 430-285.000.
Walrave, Franciskus J.: *See*—
Desert, Jean-Marie G.; and Walrave, Franciskus J., 4,434,692, Cl. 83-62.000.
Walsh, Michael M., to Mechanical Technology Incorporated. Start-up and control method and apparatus for resonant free piston Stirling engine. 4,434,617, Cl. 60-520.000.
Walter, Lee: *See*—
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, to SKF Kugellagerfabriken GmbH. Process for the production of a bearing bushing without machining. 4,434,640, Cl. 72-348.000.
Walter, Lothar: *See*—
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Walz, Gregory J.: *See*—
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Ward, Donald F.: *See*—
Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer, 4,434,718, Cl. 102-522.000.
Warman, Bloomfield J. Speech direction detection circuits for telephone communication devices. 4,435,621, Cl. 179-81.00B.
Warnaco of Canada Limited: *See*—
Hansen, Vagn A., 4,434,512, Cl. 2-129.000.
Warner, Dale J., to Gits Brothers Mfg. Co. Shaft seal. 4,434,986, Cl. 277-42.000.
Warner, Dale J., to Gits Brothers Mfg. Co. Shaft seal. 4,434,988, Cl. 277-81.00R.
Warren, Stanley L., to Viragen, Inc. Transfer factor composition and skin treatment. 4,435,384, Cl. 424-101.000.
Washecheck, Paul H.: *See*—
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.

Washimi, Koichi: *See*—
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Watanabe, Morio, to Daicel Chemical Industries, Ltd. Sport shoes. 4,434,518, Cl. 12-142.0RS.
Watanabe, Shoji; and Miho, Takuya, to Daicel Chemical Industries, Ltd. Polyol resin. 4,435,542, Cl. 525-118.000.
Watanabe, Takaji; and Noguchi, Tamio, to Merck Patent Gesellschaft mit beschrankter Haftung. Transparent colored pigments. 4,435,220, Cl. 106-291.000.
Weasel, George E., Jr. Hydro-cooling air lock. 4,434,623, Cl. 62-64.000.
Weaver, Edward A., to Owens-Illinois, Inc. Glasses suitable for sealing ferrites. 4,435,511, Cl. 501-22.000.
Weber, Harold J. Didactic apparatus providing for tutelage of responses through inculcation. 4,435,164, Cl. 434-337.000.
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Weerth, Hans-Ernst: *See*—
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Weinert, Friederich. Power wheel with double action valve in conjunction with a drill bit. 4,435,355, Cl. 376-208.000.
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Weiser, Georgiann, to Weiser Designs, Ltd. Hospital gown. 4,434,511, Cl. 2-114.000.
Weisner, Carl S.; and Raynolds, David W., to Polyloom Corporation of America. Multicomponent continuous film die. 4,435,141, Cl. 425-131.100.
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Weisz, William, to Singer Company, The. Bight and needle positioning control for sewing machines. 4,434,733, Cl. 112-158.00A.
Welch, Marilyn L., to Gold, Inc. Infant head protector. 4,434,513, Cl. 2-410.000.
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Wenger, Jean: *See*—
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Whitaker, Floyd J. Wood wheel cutter. 4,434,826, Cl. 144-219.000.
Whitcomb, William T.; and Butler, John V., to Lockheed Corporation. Dynamic spot calibration for automatic particle counters. 4,434,647, Cl. 73-1.00R.
Whitehouse, Hugh L., to Stanley Works, The. Air tool with stall torque regulator and air biasing mechanism. 4,434,858, Cl. 173-12.000.
Whitelaw, Brett A. Track block. 4,435,022, Cl. 305-53.000.
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., to Cincinnati Milacron Inc. Apparatus for high rate production of biaxially oriented thermoplastic articles. 4,435,146, Cl. 425-534.000.
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Williamson, James; and Crete, Paul G., to Raytheon Company. Automatic frequency control circuitry. 4,435,847, Cl. 455-260.000.
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Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., to International Telephone and Telegraph Corporation. Process and apparatus for making thixotropic metal slurries. 4,434,837, Cl. 164-468.000.
Winterberg, F. Method for the release of thermonuclear energy combining impact, magnetic and inertial confinement fusion. 4,435,354, Cl. 376-108.000.
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with flame front-stabilizing layer of lean oil shale particles. 4,435,016, Cl. 299-2.000.
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Woo, Gar L.; and Parker, Phillip H., to Chevron Research Company. Stabilized polypyrrolidone end capped with alkanolamine and process for preparing. 4,435,547, Cl. 525-420.000.
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., to Donnelly Mirrors, Inc. Vehicle mirror and support assembly. 4,435,042, Cl. 350-281.000.
Wood, Jill E. G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Hardness test indenters. 4,434,651, Cl. 73-85.000.
Woodley, Raymond L. Clothes peg. 4,434,535, Cl. 24-562.00R.
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Wooler, Alan M., to Abelard Management Services Limited. Process for the manufacture of urea-formaldehyde/polyurethane polymers. 4,435,526, Cl. 521-107.000.
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Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,435,762, Cl. 364-200.000.
Yeh, Jaw S., to Chen, Shu-Chang. Wire feeding and wire forming device for paper clip making machine. 4,434,818, Cl. 140-82.000.
Yokogawa Hokushin Electric Corp.: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.
Yokoo, Tomohide: *See*—
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.
Yokooku, Katsuhiko: *See*—
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Yoneyoshi, Yukio: *See*—
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.
York, Earl D.: *See*—
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, to Minolta Camera Kabushiki Kaisha. Auto-focus control camera. 4,435,058, Cl. 354-403.000.
Yoshida Kogyo K. K.: *See*—
Nagata, Kazuo; and Ishii, Susumu, 4,434,923, Cl. 225-97.000.
Seki, Fumio, 4,434,928, Cl. 227-16.000.
Yoshida Kogyo K.K.: *See*—
Osaki, Tatsuo, 4,434,538, Cl. 29-33.200.
Yoshida, Yuji: *See*—
Tachikawa, Kyoji; and Yoshida, Yuji, 4,435,228, Cl. 148-11.50Q.
Yoshii, Tsuneo; Ueda, Toshitaka; and Kuroda, Tsukasa. Method of producing a catalyst for liquefaction of coal. 4,435,522, Cl. 502-319.000.
Yoshimoto, Masahiro: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling pressurized air supply to engines. 4,434,775, Cl. 123-564.000.
Yoshimura, Ryoichi: *See*—
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, to Shinagawa Refractories Co., Ltd. Heat-resistant inorganic compositions. 4,435,215, Cl. 106-84.000.
Yoshioka, Hiroshi: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.
Yoshiyuki, Kazuhiko: *See*—
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.
Yoshizaki, Akira: *See*—
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.
Young, Ronald R., II. Solar powered reactor. 4,434,787, Cl. 126-438.000.
Zack, Leonard N.: *See*—
Shelton, Huey G.; and Zack, Leonard N., 4,434,721, Cl. 108-4.000.
Zahnradfabrik Friedrichshafen AG: *See*—
Friedrich, Ehrlinger; and Meyerle, Michael, 4,434,681, Cl. 74-687.000.
Zajac, Theodore S., to Parker-Hannifin Corporation. Electro-hydraulic proportional control valve. 4,434,966, Cl. 251-205.000.
Zandbergen, Adrian. Method of making a conical spiral antenna. 4,435,716, Cl. 343-895.000.
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., to Ashland Oil, Inc. Catalyst for the conversion of carbo-metallic containing oils. 4,435,515, Cl. 502-65.000.
Zarinsh, Guntis V.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Zauer, Karoly: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Zboralski, Jon A.; and Grow, Harry N., to Hamilton Industries, Inc. Fume hood with damper controlled baffles and method. 4,434,711, Cl. 98-116.0LH.
Zellmer, Hans. Heat insulated roof structure. 4,434,601, Cl. 52-745.000.
Zenbutsu, Tadashi: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.
Zenith Radio Corporation: *See*—
Dobrovolny, Pierre, 4,435,841, Cl. 455-180.000.
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, to Philipp Holzmann AG. Component useful in producing a cooling tower. 4,434,591, Cl. 52-73.000.
Zheng, Yea K., to Nianbilla Company Limited. Vertical axis windmill. 4,435,124, Cl. 416-119.000.
Ziegler, Erich. Aromatic citrus oil concentrate which is stable in storage. 4,435,437, Cl. 426-651.000.
Zierdt, Charles H., to United States of America, Health and Human Services. Lysis filtration culture chamber. 4,435,505, Cl. 435-34.000.
Zoppi, Michel: *See*—
Flot, Regis; and Zoppi, Michel, 4,435,454, Cl. 428-36.000.
Zscheile, John W., Jr.: *See*—
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., 4,435,822, Cl. 375-1.000.
Zuech, Ernest A.: *See*—
Wu, Yulin; and Zuech, Ernest A., 4,435,596, Cl. 562-481.000.
Zuk, Robert F.; and Litman, David J., to Syva Company. Immunochromatographic assay with support having bound "MIP" and second enzyme. 4,435,504, Cl. 435-7.000.
Zyntrax Corporation, The: *See*—
Woloshuk, Edward A.; and Walz, Gregory J., 4,435,053, Cl. 352-86.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ball Corporation: *See*—
Lowe, Earl L., Re. 31,529, Cl. 137-884.000.

Bell Telephone Laboratories, Incorporated: *See*—
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.

Catalyst Research Corporation: *See*—
Schneider, Alan A.; and Moser, James R., Re. 31,532, Cl. 429-191.000.

Donn Incorporated: *See*—
Mieyal, David F., Re. 31,528, Cl. 52-730.000.

Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., to Bell Telephone Laboratories, Incorporated. Communication system conferencing arrangement. Re. 31,534, Cl. 179-99.00R.

Lambert, William R. Method and apparatus for eviscerating scallops. Re. 31,527, Cl. 17-51.000.

Lewis, Terry W., to Minnesota Mining and Manufacturing Company. Information carrying discs. Re. 31,533, Cl. 428-65.000.

Lowe, Earl L., to Ball Corporation. Electronic valve assembly for glassware forming machinery. Re. 31,529, Cl. 137-884.000.

Matson, Crawford A.: *See*—
Ragard, Phillip A.; and Matson, Crawford A., Re. 31,530, Cl. 140-105.000.

Mieyal, David F., to Donn Incorporated. Grid tee for suspension ceilings or the like. Re. 31,528, Cl. 52-730.000.

Minnesota Mining and Manufacturing Company: *See*—
Lewis, Terry W., Re. 31,533, Cl. 428-65.000.

Moser, James R.: *See*—
Schneider, Alan A.; and Moser, James R., Re. 31,532, Cl. 429-191.000.

Ragard, Phillip A.; and Matson, Crawford A., to Universal Instruments Corporation. Multiple lead cut and clinch mechanism. Re. 31,530, Cl. 140-105.000.

Rockwell International Corporation: *See*—
Williams, William J., Re. 31,531, Cl. 188-341.000.

Schneider, Alan A.; and Moser, James R., to Catalyst Research Corporation. Primary cells and iodine containing cathodes therefor. Re. 31,532, Cl. 429-191.000.

Universal Instruments Corporation: *See*—
Ragard, Phillip A.; and Matson, Crawford A., Re. 31,530, Cl. 140-105.000.

Van Ornum, James H.: *See*—
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.

Wang, Tse L.: *See*—
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.

Weiss, Carl D.: *See*—
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.

Williams, William J., to Rockwell International Corporation. Brake assembly. Re. 31,531, Cl. 188-341.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants and Manufacturers, Inc. Fabric treating compositions. B1 4,266,976, 3-6-84, Cl. 106-2.000.

Namboodri, Chettoor G.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., B1 4,266,976, Cl. 106-2.000.

United Merchants and Manufacturers, Inc.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., B1 4,266,976, Cl. 106-2.000.

Wilson, Jerry L. Multi-purpose exercise device. B1 4,072,309, 3-6-84, Cl. 272-136.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
Johnson, Philip A.; and McCarthy, Alfred F., 272,902, Cl. D13-23.000.

Anderson, Kenneth J., to Milton Bradley International, Inc. Toy clock. 272,930, 3-6-84, Cl. D21-144.000.

Aurora Design Associates, Inc.: *See*—
Gardner, James H.; and de Nevers, Noel H., 272,882, Cl. D7-70.000.

Beasley, Rex W., III. Building. 272,947, 3-6-84, Cl. D25-1.000.

Beaty, John E., Sr. One piece dome ceiling. 272,949, 3-6-84, Cl. D25-92.000.

Beirise, Jean M.: *See*—
Coons, John C.; and Beirise, Jean M., 272,907, Cl. D14-58.000.

Belson, Sharon: *See*—
Quinn, Ronald B.; Hudson, Mark; and Belson, Sharon, 272,923, Cl. D21-55.000.

Bergsland, Jon. Foundation wall outer moisture bar sheet or basement inner wall or floor humidity controlling lining sheet or the like. 272,957, 3-6-84, Cl. D92-31.000.

Blomberg, Knut H. Telephone instrument. 272,905, 3-6-84, Cl. D14-53.000.

Boissicat, Claude M., to Contrel. Combined handling, testing, and sorting machine for integrated circuits. 272,913, 3-6-84, Cl. D15-147.000.

Bolton, James C., to Industrial Tools, Inc. Tape slitter. 272,911, 3-6-84, Cl. D15-127.000.

Brookes, Malcolm J.: *See*—
Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., 272,906, Cl. D14-58.000.

Brown, Warner K.: *See*—
Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., 272,956, Cl. D34-37.000.

Bruce, Marilyn M. Jewelry pendant or the like. 272,891, 3-6-84, Cl. D11-78.000.

Bull, LaVera R. Communion rail. 272,948, 3-6-84, Cl. D25-38.000.

Burgi, William; and DePartout, Thomas. Toy worm or similar article. 272,931, 3-6-84, Cl. D21-148.000.

Burns, Daniel E. Dual liquid ice probe. 272,941, 3-6-84, Cl. D23-1.000.

California R&D: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Casetta, Gino, to Simod Patents N.A.N.V. Sport shoe. 272,866, 3-6-84, Cl. D2-309.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. Combined lighter and cigar/cigarette filter perforator. 272,950, 3-6-84, Cl. D27-38.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. Combined lighter and cigar/cigarette filter perforator. 272,951, 3-6-84, Cl. D27-38.000.

Chambers, Jeffrey M.; and Kata, Joseph, to Milton Bradley International, Inc. Electronic game board. 272,919, 3-6-84, Cl. D21-24.000.

Chaparral Communications, Inc.: *See*—
Taggart, Robert B.; and Taylor, Howard H., 272,910, Cl. D14-90.000.

Chapman, Leif H., to General Motors Corporation. Vehicle wheel cover. 272,897, 3-6-84, Cl. D12-211.000.

Clark Equipment Company: *See*—
Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., 272,956, Cl. D34-37.000.
Witczak, Stanley, 272,909, Cl. D15-28.000.

Cohen, Piet, to Materias Plasticas, Limitada. Brush holder and brush for toilet. 272,874, 3-6-84, Cl. D6-86.000.

Contrel: *See*—
Boissicat, Claude M., 272,913, Cl. D15-147.000.

Coons, John C.; and Beirise, Jean M., to Masco Corporation of Indiana. Telephone base station. 272,907, 3-6-84, Cl. D14-58.000.

Corey, Charles D.; and Pia, Francesco A. Marine rescue and recreational board. 272,935, 3-6-84, Cl. D21-228.000.

Coughlin, Vincent D. Bacteriological loop holder. 272,944, 3-6-84, Cl. D24-31.000.

Davis, Paul, to Loach Manufacturing Co. Ltd. Carrying case for cash. 272,869, 3-6-84, Cl. D3-73.000.

Dawes, Kerry G., to Praegitzer, Dennis A. Propeller counterweight bearing assembly. 272,912, 3-6-84, Cl. D15-143.000.

de Nevers, Noel H.: *See*—
Gardner, James H.; and de Nevers, Noel H., 272,882, Cl. D7-70.000.

DePartout, Thomas: *See*—
Burgi, William; and DePartout, Thomas, 272,931, Cl. D21-148.000.

Designs for Vision, Inc.: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, 272,915, Cl. D16-130.000.

Dowrick, David C.; and Lanning, John M., to Harnischfeger Corporation. Mobile crane. 272,955, 3-6-84, Cl. D34-34.000.

Dropik, Martin J., to Quaker Oats Company, The. Push toy. 272,927, 3-6-84, Cl. D21-92.000.

Dufour, Kenneth L.: *See*—
Stone, Robert D.; and Dufour, Kenneth L., 272,943, Cl. D24-29.000.

Dunlop Limited: *See*—
Popplewell, Frank W., 272,934, Cl. D21-207.000.
Tomoda, Hiroshi, 272,899, Cl. D12-141.000.

Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.): *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 272,877, Cl. D6-209.000.

Edelmann, Paul H. Combined sweat band and eye shield. 272,865, 3-6-84, Cl. D2-241.000.

Electronic Assemblies, Inc.: *See*—
Sparks, James, 272,954, Cl. D34-21.000.

F. LLI Guzzini S.p.A.: *See*—
Pozzi, Ambrogio, 272,879, Cl. D7-21.000.
Pozzi, Ambrogio, 272,880, Cl. D7-21.000.

Fabian, Wolfgang. Sanitary fitting for a bidet. 272,942, 3-6-84, Cl. D23-23.000.

Famiglietti, Angelo. Barbecue stove. 272,885, 3-6-84, Cl. D7-333.000.

Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, to Designs for Vision, Inc. Optical coupler photographic accessory. 272,915, 3-6-84, Cl. D16-130.000.

Fisher, Robert C., to Quaker Oats Company, The. Toy truck. 272,928, 3-6-84, Cl. D21-133.000.

Forster, Karl-Heinz: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, to Veb Kombinat Polygraph "Werner Lamberz". Machine control console. 272,903, 3-6-84, Cl. D13-40.000.

Gardner, James H.; and de Nevers, Noel H., to Aurora Design Associates, Inc. Server for a wine bottle or the like. 272,882, 3-6-84, Cl. D7-70.000.

General Motors Corporation: *See*—
Chapman, Leif H., 272,897, Cl. D12-211.000.

Glaser, Robert L., to L. M. Becker & Co., Inc. Vending machine. 272,918, 3-6-84, Cl. D20-1.000.

Gorenje Tgo N.Sol.O, Velenje: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Guinn, Kenneth F. Flyable toy rotor for kite. 272,926, 3-6-84, Cl. D21-91.000.

Gutkneht, Leroy: *See*—
Wichinsky, Michael; and Gutkneht, Leroy, 272,920, Cl. D21-37.000.

Gwaltney, Madison W.; and Longserre, Goodrich W. Hidden mountable strap for billfold or the like. 272,867, 3-6-84, Cl. D2-400.000.

Hand, William A. Drapery for framing furniture or the like. 272,876, 3-6-84, Cl. D6-205.000.

Harnischfeger Corporation: *See*—
Dowrick, David C.; and Lanning, John M., 272,955, Cl. D34-34.000.

Heap, Jean W., to Pendelfin Studios Limited. Table ornament. 272,895, 3-6-84, Cl. D11-158.000.

Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., to International Telephone and Telegraph Corporation. Telephone console. 272,906, 3-6-84, Cl. D14-58.000.

Hilko, Steven E., to Quaker Oats Company, The. Toy truck. 272,929, 3-6-84, Cl. D21-139.000.

Holcombe, J. L., to Mizell, Emerson H. Insulation support. 272,886, 3-6-84, Cl. D8-380.000.

Holloway, Thomas F., to Risdon Corporation. Cosmetic container. 272,952, 3-6-84, Cl. D28-89.000.

Howden, Ashley G.: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Hudson, Mark: *See*—
Quinn, Ronald B.; Hudson, Mark; and Belson, Sharon, 272,923, Cl. D21-55.000.

Industrial Tools, Inc.: *See*—
Bolton, James C., 272,911, Cl. D15-127.000.

Interdica S.A.: *See*—
Kanoui, Joseph, 272,878, Cl. D7-6.000.
Kanoui, Joseph, 272,881, Cl. D7-28.000.

International Telephone and Telegraph Corporation: *See*—
Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., 272,906, Cl. D14-58.000.

Jaffee, Max. Luggage cover. 272,868, 3-6-84, Cl. D3-41.000.

Johansson, Tord G. I. High pressure cover. 272,940, 3-6-84, Cl. D23-01.000.

Johne, Hans: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Johnson, Philip A.; and McCarthy, Alfred F., to Aavid Engineering, Inc. Self-fastened heat sink. 272,902, 3-6-84, Cl. D13-23.000.

Johnston, Brian M. Soap stand. 272,875, 3-6-84, Cl. D6-89.000.

Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, to California R&D. Simulative toy vehicle. 272,925, 3-6-84, Cl. D21-74.000.

Kabushiki Kaisha Bandai: *See*—
Murakami, Katsuji, 272,933, Cl. D21-166.000.

Kanoui, Joseph, to Interdica S.A. Cup. 272,878, 3-6-84, Cl. D7-6.000.

Kanoui, Joseph, to Interdica S.A. Finger-bowl. 272,881, 3-6-84, Cl. D7-28.000.

Kata, Joseph: *See*—
Chambers, Jeffrey M.; and Kata, Joseph, 272,919, Cl. D21-24.000.

Kawano, Takeyoshi, to Sony Corporation. Earphone. 272,904, 3-6-84, Cl. D14-30.000.

Kim, Syng N., to Wico Corporation. Control for a video game or the like. 272,921, 3-6-84, Cl. D21-48.000.

Kingsbury, L. C. James: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Kinoyama, Takehisa: *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 272,877, Cl. D6-209.000.

Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., to Clark Equipment Company. Lift truck body. 272,956, 3-6-84, Cl. D34-37.000.

Klecker, Barney J. Snowshoe. 272,936, 3-6-84, Cl. D21-228.000.

Klecker, Barney J. Binding for a snowshoe. 272,937, 3-6-84, Cl. D21-230.000.

Knez, Danijel: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Knighton, Mark S.: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Kobashigawa, Dana P. H. Novelty pig figure. 272,896, 3-6-84, Cl. D11-158.000.

Kodaka, Tatsuya. Scorpion figure. 272,893, 3-6-84, Cl. D11-158.000.

Kodaka, Tatsuya. Tarantula figure. 272,894, 3-6-84, Cl. D11-158.000.

Kralj, Bozo: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Kuchenbecker, Hans J. L.: *See*—
Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf, 272,898, Cl. D12-108.000.

Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf. Toy car with pedal drive. 272,898, 3-6-84, Cl. D12-108.000.

Kuchenbecker, Rolf: *See*—
Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf, 272,898, Cl. D12-108.000.

L. M. Becker & Co., Inc.: *See*—
Glaser, Robert L., 272,918, Cl. D20-1.000.

Lanci, Dennis M.: *See*—
Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., 272,956, Cl. D34-37.000.

Lanning, John M.: *See*—
Dowrick, David C.; and Lanning, John M., 272,955, Cl. D34-34.000.

Lepczynski, Richard: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, 272,915, Cl. D16-130.000.

Loach Manufacturing Co. Ltd.: *See*—
Davis, Paul, 272,869, Cl. D3-73.000.
Longserre, Goodrich W.: *See*—
Gwaltney, Madison W.; and Longserre, Goodrich W., 272,867, Cl. D2-400.000.
Masco Corporation of Indiana: *See*—
Coons, John C.; and Beirise, Jean M., 272,907, Cl. D14-58.000.
Materias Plasticas, Limitada: *See*—
Cohen, Piet, 272,874, Cl. D6-86.000.
Matsuo, Toshiyuki, to Sony Corporation. Television receiver. 272,908, 3-6-84, Cl. D14-77.000.
McCarthy, Alfred F.: *See*—
Johnson, Philip A.; and McCarthy, Alfred F., 272,902, Cl. D13-23.000.
McDaniel, Robert E. Model hobby glowplug power source with negative terminal headlock. 272,901, 3-6-84, Cl. D13-8.000.
Mengshoel, Hans C.; and Rykken, Oddvin. Chair. 272,873, 3-6-84, Cl. D6-26.000.
Micucci, Joseph M., to Olympic Sales Club, Inc. Combined paper and pencil caddy. 272,917, 3-6-84, Cl. D19-78.000.
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Moreno, Norberto. Combined crib and storage unit. 272,872, 3-6-84, Cl. D6-16.000.
Mueschke, Herman W., Jr. Pistol grip part. 272,938, 3-6-84, Cl. D22-1.000.
Murakami, Katsuji, to Kabushiki Kaisha Bandai. Toy robot. 272,933, 3-6-84, Cl. D21-166.000.
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Obst, Charles J., to Vastano, Joseph J., a part interest. Wind vane steering control for boats. 272,900, 3-6-84, Cl. D12-317.000.
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Olympic Sales Club, Inc.: *See*—
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Rapaport, Gerald M. Child's clothes rack. 272,871, 3-6-84, Cl. D6-5.000.
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Miles, Richard; and Stokes, Adrian D., 272,870, Cl. D3-76.000.
Stone, Robert D.; and Dufour, Kenneth L. Electrode for biomedical signals. 272,943, 3-6-84, Cl. D24-29.000.
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Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, to Gorenje Tgo N.Sol.O, Velenje. Device for the stimulation of vaginal muscles. 272,945, 3-6-84, Cl. D24-36.000.
Sun, George C. Ornament. 272,892, 3-6-84, Cl. D11-125.000.
Taggart, Robert B.; and Taylor, Howard H., to Chaparral Communications, Inc. Feedhorn for parabolic antennae. 272,910, 3-6-84, Cl. D14-90.000.
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Tomatsuri, Masakazu; and Takahashi, Chiyoji, to Nippon Kogaku K.K. Monocular. 272,916, 3-6-84, Cl. D16-132.000.
Tomoda, Hiroshi, to Dunlop Limited. Tire for a vehicle wheel. 272,899, 3-6-84, Cl. D12-141.000.
Valencia, C. Esteban. Font or the like. 272,958, 3-6-84, Cl. D99-25.000.
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Walton, Benn C., to Sewell Plastics, Inc. Bottle or similar article. 272,889, 3-6-84, Cl. D9-370.000.
Wells, Harold T., to National Can Corporation. Bottle. 272,888, 3-6-84, Cl. D9-352.000.
Westbury Foundation, The: *See*—
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Cervantes, Rafael T., 272,951, Cl. D27-38.000.
Wichinsky, Michael; and Gutknecht, Leroy. Gaming machine. 272,920, 3-6-84, Cl. D21-37.000.
Wico Corporation: *See*—
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Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, to Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.). Door mat base plate or similar article. 272,877, 3-6-84, Cl. D6-209.000.

LIST OF PLANT PATENTEES

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant(-Flash). 5,202, 3-6-84, Cl. 74.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Rosario. 5,199, 3-6-84, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named White Dream. 5,200, 3-6-84, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Pink Sensation. 5,201, 3-6-84, Cl. 68.000.

Sun Valley Bulb Farms, Inc.: *See*—
Kirsch, Ted T., 5,199, Cl. 68.000.
Kirsch, Ted T., 5,200, Cl. 68.000.
Kirsch, Ted T., 5,201, Cl. 68.000.

Yoder Brothers, Inc.: *See*—
Duffett, William E., 5,202, Cl. 74.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF MARCH, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Eveland, Richard E.: *See*—
Hall, Lon E.; and Eveland, Richard E., T104,003, Cl. 364-200.000.

Gode, Donald F.: *See*—
Morrison, John F.; Jensen, Harold E.; and Gode, Donald F., T104,002, Cl. 312-214.000.

Hall, Lon E.; and Eveland, Richard E. Synchronous data link slow-poll protocol. T104,003, 3-6-84, Cl. 364-200.000.

Jensen, Harold E.: *See*—
Morrison, John F.; Jensen, Harold E.; and Gode, Donald F., T104,002, Cl. 312-214.000.

Kunter, Richard S.; and Turney, John R. Method for recovering gold from refractory ores. T104,001, 3-6-84, Cl. 75-118.00R.

Morrison, John F.; Jensen, Harold E.; and Gode, Donald F. Modular insulated cabinet construction. T104,002, 3-6-84, Cl. 312-214.000.

Turney, John R.: *See*—
Kunter, Richard S.; and Turney, John R., T104,001, Cl. 75-118.00R.

von Rymon Lipinski, Gert-Wolfhard. Taste improvement of table top preparations containing Acesulfame K. T104,004, 3-6-84, Cl. 426-548.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 6, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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6.2 4,434,864
19 H 4,434,865
143 4,434,866
190 4,434,867
226 4,434,868

CLASS 182

10 4,434,869
48 4,434,870
198 4,434,871

CLASS 187

8.74 4,434,872
28 4,434,873
29 R 4,434,874
4,434,875
95 4,434,876

CLASS 188

52 4,434,877
341 Re.31,531

CLASS 192

0.052 4,434,879
48.92 4,434,878
67 R 4,434,880
89 A 4,434,881
98 4,434,882
110 R 4,434,883

CLASS 198

328 4,434,884
388 4,434,885
389 4,434,886
391 4,434,887
466 4,434,888

CLASS 200

42 T 4,435,624
61.22 4,435,625
81.9 R 4,435,626
148 R 4,435,627

CLASS 202

239 4,435,250

CLASS 203

50 4,435,251

CLASS 204

11 4,435,252
43 G 4,435,253
49 4,435,254
67 4,435,255
86 4,435,256
4,435,257
109 4,435,258
159.13 4,435,259
164 4,435,260
168 4,435,261
181 C 4,435,262
197 4,435,263
4,435,264
198 4,435,265
276 4,435,266
284 4,435,267
408 4,435,268

CLASS 206

216 4,434,889
443 4,434,890
444 4,434,891
446 4,434,892
522 4,434,893
526 4,434,894
554 4,434,895
621 4,434,896

CLASS 208

8 R 4,435,269
11 R 4,435,270
4,435,271
48 AA 4,435,273
80 4,435,274
89 4,435,275
96 4,435,276
108 4,435,277
111 4,435,279
112 4,435,280
113 4,435,281
4,435,282
127 4,435,272
138 4,435,283
251 H 4,435,278

CLASS 209

3 4,435,284
250 4,435,285

CLASS 210

116 4,435,286
131 4,435,287
227 4,435,288
637 4,435,289
708 4,435,290
739 4,435,291
747 4,435,292
772 4,435,293

CLASS 211

1.3 4,434,897
4,434,898
41 4,434,899
189 4,434,900

CLASS 212

153 4,434,901
268 4,434,902

CLASS 215

222 4,434,903
232 4,434,904

CLASS 219

10.55 A 4,435,629
10.55 M 4,435,628
98 4,435,630
124.02 4,435,631
130.51 4,435,632
216 4,435,633
4,435,634
227 4,435,635
230 4,435,636
358 4,435,637
460 4,435,638
544 4,435,639

CLASS 220

89 A 4,434,905
268 4,434,906
276 4,434,907
4,434,908
316 4,434,909
358 4,434,910

CLASS 221

2 4,434,911
227 4,434,912
267 4,434,913

CLASS 222

153 4,434,914
4,434,915
321 4,434,916
383 4,434,917

CLASS 223

75 4,434,918

CLASS 224

42.21 4,434,919
160 4,434,920
253 4,434,921
314 4,434,922

CLASS 225

97 4,434,923

CLASS 226

120 4,434,924
127 4,434,925
172 4,434,926

CLASS 227

9 4,434,927
16 4,434,928
115 4,434,929

CLASS 228

118 4,434,930

CLASS 232

15 4,434,931

CLASS 235

78 M 4,435,640

CLASS 236

49 4,434,932
75 4,434,933

CLASS 237

12.3 R 4,434,934

CLASS 239

85 4,434,935
178 4,434,936
230 4,434,937
274 4,434,938
345 4,434,939
397.5 4,434,940
587 4,434,941

CLASS 241

21 4,434,942
46.08 4,434,943
258 4,434,944

CLASS 242

7.14 4,434,945
18 G 4,434,946
57.1 4,434,947
59 4,434,948
66 4,434,949
67.2 4,434,950
84.52 B 4,434,951
107 4,434,952
4,434,953
189 4,434,954
199 4,434,955

CLASS 244

17.25 4,434,956
35 R 4,434,957
126 4,434,958
215 4,434,959

CLASS 248

220.4 4,434,960
311.2 4,434,961

CLASS 249

65 4,434,962

CLASS 250

223 B 4,435,641
296 4,435,642
358.1 4,435,643
435 4,435,644
493.1 4,435,645

CLASS 251

7 4,434,963
62 4,434,964
121 4,434,965
205 4,434,966
328 4,434,967

CLASS 252

8.55 D 4,435,295
8.6 4,435,294
28 4,435,296
33.2 4,435,301
34 4,435,298
34.7 4,435,297
41 4,435,299
62.51 4,435,302
80 4,435,303
117 4,435,300
156 4,435,304
158 4,435,305
173 4,435,306
174.12 4,435,307
181 4,435,308
314 4,435,309
370 4,435,310
522 R 4,435,315
4,435,316
547 4,435,317

CLASS 254

1 4,434,968
29 R 4,434,969
108 4,434,970
273 4,434,971
340 4,434,972
344 4,434,973
360 4,434,974

CLASS 256

17 4,434,975

CLASS 260

112 B 4,435,318
123.5 4,435,319
152 4,435,320
239 A 4,435,321
4,435,322
378 4,435,324
397.2 4,435,325
397.3 4,435,326
397.5 4,435,327
400 4,435,328
455 R 4,435,329
458 F 4,435,330
463 4,435,331
465 D 4,435,332
4,435,333
501.12 4,435,334
502 R 4,435,335
508 4,435,336
929 4,435,338

CLASS 261

153 4,435,339

CLASS 264

4.7 4,435,340
7 4,435,341
8 4,435,342
22 4,435,343
45.1 4,435,344
53 4,435,345
54 4,435,346
118 4,435,347
174 4,435,348
257 4,435,349
280 4,435,350
335 4,435,351
504 4,435,352
518 4,435,353

CLASS 266

268 4,434,976

CLASS 267

33 4,434,977

CLASS 269

69 4,434,978

CLASS 271

307 4,434,979

CLASS 272

78 4,434,980
97 4,434,981
136 B1 4,072,309

CLASS 273

153 S 4,434,982
187 R 4,434,983
246 4,434,984

CLASS 277

37 4,434,985
42 4,434,986
80 4,434,987
81 R 4,434,988
235 B 4,434,989

CLASS 279

4 4,434,990

CLASS 280

5 R 4,434,991
47.13 B 4,434,992
402 4,434,993
404 4,434,994
414.1 4,434,995
504 4,434,996
625 4,434,997
721 4,434,998
752 4,434,999
806 4,435,000

CLASS 282

11.5 A 4,435,001
27.5 4,435,002
4,435,003
4,435,004

CLASS 285

31 4,435,005
119 4,435,006

CLASS 290

44 4,435,646
4,435,647

CLASS 292

268 4,435,007

CLASS 294

25 4,435,008

CLASS 296

97 H 4,435,009
100 4,435,010

CLASS 297

113 4,435,011
355 4,435,012
364 4,435,013
452 4,435,014
453 4,435,015

CLASS 299

2 4,435,016
19 4,435,017
43 4,435,018

CLASS 303

6 A 4,435,019
6 C 4,435,020
10 4,435,021

CLASS 305

53 4,435,022

CLASS 307

10 AT 4,435,649
10 R 4,435,648
32 4,435,650
252 UA 4,435,651
297 4,435,652
309 4,435,653
455 4,435,654
490 4,435,655
513 4,435,656
516 4,435,657
530 4,435,658

CLASS 308

2 R 4,435,023
217 4,435,024

CLASS 310

68 R 4,435,659
70 R 4,435,660
90 4,435,661
168 4,435,662
186 4,435,664
306 4,435,663
307 4,435,665
328 4,435,666
367 4,435,667

CLASS 312

31 4,435,025
45 4,435,026
222 4,435,027
258 4,435,028
320 4,435,029
351 4,435,030

CLASS 313

388 4,435,668
634 4,435,669

CLASS 315

58 4,435,670
200 R 4,435,671
366 4,435,672

CLASS 318

254 A 4,435,673
640 4,435,674

CLASS 320

22 4,435,675

CLASS 322

33 4,435,676

CLASS 323

235 4,435,677
273 4,435,678
350 4,435,679

CLASS 324

316 4,435,680
459 4,435,681

CLASS 329

107 4,435,682

CLASS 330

2 4,435,683
51 4,435,684
261 4,435,685
311 4,435,686

CLASS 331

23 4,435,687
99 4,435,688

CLASS 333

81 A 4,435,689

CLASS 335

37 4,435,690

CLASS 338

125 4,435,691
214 4,435,692
238 4,435,693

CLASS 339

17 C 4,435,031
36 4,435,032
45 M 4,435,033
98 4,435,034
99 R 4,435,035

CLASS 340

119 4,435,696
347 AD 4,435,697
512 4,435,698
539 4,435,699
4,435,700
546 4,435,701
671 4,435,702
723 4,435,703
825.01 4,435,704
825.05 4,435,705
825.08 4,435,706
953 4,435,694
966 4,435,695

CLASS 343

5 W 4,435,707
12 A 4,435,708
14 4,435,709
17.7 4,435,712
18 E 4,435,710
389 4,435,711
702 4,435,713
753 4,435,714
771 4,435,715
895 4,435,716

CLASS 346

1.1 4,435,717
75 4,435,718
4,435,719
4,435,720
140 R 4,435,721
153.1 4,435,722
154 4,435,723

CLASS 350

96.20 4,435,036
4,435,037
96.21 4,435,038
96.25 4,435,039
96.33 4,435,040
162.24 4,435,041
281 4,435,042
288 4,435,043
302 4,435,044
310 4,435,045
334 4,435,046
4,435,047
357 4,435,048
454 4,435,049

CLASS 351

160 R 4,435,050
208 4,435,051
239 4,435,052

CLASS 352

86 4,435,053

CLASS 353

95 4,435,054

CLASS 354

4 4,435,055
21 4,435,056
173.1 4,435,060
173.11 4,435,061
303 4,435,062
315 4,435,063
403 4,435,058
426 4,435,057
453 4,435,059

CLASS 355

1 4,435,064
3 DD 4,435,065
3 FU 4,435,069
4,435,072
3 R 4,435,068
3 SC 4,435,066
3 TR 4,435,067
8 4,435,070

10 4,435,071
15 4,435,073
4,435,074
35 4,435,075
41 4,435,076
51 4,435,077

CLASS 356

121 4,435,078
123 4,435,079
426 4,435,080

CLASS 357

79 4,435,724

CLASS 358

36 4,435,725
135 4,435,726
139 4,435,727
140 4,435,728
183 4,435,729
213 4,435,730
243 4,435,731
254 4,435,732
302 4,435,733
335 4,435,734

CLASS 360

74.4 4,435,735
103 4,435,736

CLASS 361

280 4,435,737
321 4,435,738
346 4,435,739
398 4,435,740
401 4,435,741
433 4,435,742

CLASS 362

20 4,435,743
219 4,435,744

CLASS 363

21 4,435,745
4,435,746
25 4,435,747
54 4,435,748
58 4,435,749
177 4,435,750

CLASS 364

200 4,435,752
4,435,753
4,435,754
4,435,755
4,435,756
4,435,757
4,435,758
4,435,759
4,435,761
4,435,762
4,435,763
4,435,764
4,435,765
300 4,435,766
405 4,435,767
426 4,435,768
444 4,435,760
464 4,435,769
474 4,435,771
508 4,435,770
520 4,435,772
574 4,435,751
716 4,435,782
724 4,435,773
726 4,435,774
900 4,435,775
4,435,776
4,435,777
4,435,778
4,435,779
4,435,780
4,435,781

CLASS 365

5 4,435,783
8 4,435,784
147 4,435,785
154 4,435,786
174 4,435,787
185 4,435,788
203 4,435,789
218 4,435,790
230 4,435,791
4,435,792
233 4,435,793

CLASS 366

18 4,435,081
47 4,435,082
114 4,435,083
130 4,435,084
155 4,435,085

CLASS 367

4,435,794

CLASS 368

16 4,435,795
22 4,435,086
76 4,435,087
88 4,435,088
204 4,435,089
320 4,435,090
321 4,435,796

CLASS 369

32 4,435,797
72 4,435,798
77.2 4,435,799
225 4,435,800
275 4,435,801
286 4,435,802

CLASS 370

16 4,435,803
69.1 4,435,804

CLASS 371

25 4,435,805
4,435,806
50 4,435,807

CLASS 372

11 4,435,808
49 4,435,809
58 4,435,810

CLASS 373

39 4,435,811
72 4,435,812
4,435,813
76 4,435,814
81 4,435,815
91 4,435,816
103 4,435,817
104 4,435,818
119 4,435,819
161 4,435,820

CLASS 374

20 4,435,091
129 4,435,092
4,435,093
191 4,435,094
194 4,435,095

CLASS 375

1 4,435,821
4,435,822
14 4,435,823
46 4,435,824
113 4,435,825
115 4,435,826

CLASS 376

108 4,435,354
208 4,435,355
216 4,435,356
272 4,435,357
4,435,358

CLASS 377

44 4,435,827

CLASS 378

49 4,435,828
60 4,435,829
197 4,435,830

CLASS 381

7 4,435,618
30 4,435,831
34 4,435,832
44 4,435,617
109 4,435,833

CLASS 382

7 4,435,834
8 4,435,835
27 4,435,836
41 4,435,837
68 4,435,838

CLASS 384

103 4,435,839
147 4,435,096
221 4,435,097

CLASS 400

674 4,435,098

CLASS 401

145 4,435,099

CLASS 403

27 4,435,100
109 4,435,105
122 4,435,101
206 4,435,102
292 4,435,103
332 4,435,104

CLASS 404

6 4,435,106
10 4,435,107

CLASS 405

209 4,435,108

CLASS 408

14 4,435,109

CLASS 409

11 4,435,110

CLASS 411

368 4,435,112
437 4,435,111

CLASS 414

330 4,435,114
347 4,435,113
490 4,435,115
620 4,435,117
4,435,119
728 4,435,116
735 4,435,120
744 R 4,435,118

CLASS 415

56 4,435,121
121 B 4,435,122

CLASS 416

95 4,435,123
119 4,435,124
132 B 4,435,125
186 R 4,435,126

CLASS 417

26 4,435,127
63 4,435,128
151 4,435,129
310 4,435,130
334 4,435,131
360 4,435,132
364 4,435,133
428 4,435,134
511 4,435,135

CLASS 418

55 4,435,136
4,435,137
131 4,435,138
201 4,435,139
259 4,435,140

CLASS 419

3 4,435,359
49 4,435,360

CLASS 422

12 4,435,361
56 4,435,362
145 4,435,364
270 4,435,363

CLASS 423

6 4,435,366
10 4,435,367
40 4,435,368
76 4,435,365
147 4,435,369
158 4,435,370
228 4,435,371
321 R 4,435,372
403 4,435,373
415 A 4,435,374
439 4,435,375
447.3 4,435,376
460 4,435,377
461 4,435,378
472 4,435,379

CLASS 424

49 4,435,380
54 4,435,381
66 4,435,382
78 4,435,383
101 4,435,384
177 4,435,385
4,435,386
180 4,435,387
4,435,388
181 4,435,389
243 4,435,390
244 4,435,391
4,435,392
246 4,435,393
248.5 4,435,394
4,435,395
248.51 4,435,396
250 4,435,397
4,435,398
4,435,399
4,435,400
251 4,435,401
4,435,402
256 4,435,403
258 4,435,404
4,435,405
263 4,435,406
4,435,407
4,435,408
266 4,435,409
267 4,435,410
269 4,435,411
270 4,435,412
4,435,413
271 4,435,414
272 4,435,415
273 B 4,435,417
4,435,418
273 P 4,435,416
274 4,435,419
277 4,435,420
4,435,421
285 4,435,422
318 4,435,423
319 4,435,424
324 4,435,426
325 4,435,425
330 4,435,449
356 4,435,427

CLASS 425

131.1 4,435,141
145 4,435,142
150 4,435,143
332 4,435,144
458 4,435,145
534 4,435,146
577 4,435,147

CLASS 426

3 4,435,428
18 4,435,429
4,435,430
36 4,435,431
43 4,435,432
108 4,435,434
266 4,435,433
557 4,435,435
565 4,435,439
631 4,435,436
651 4,435,437
656 4,435,438
658 4,435,440

CLASS 427

10 4,435,441
14.1 4,435,442
38 4,435,443
49 4,435,444
54.1 4,435,445
93 4,435,446
94 4,435,447
234 4,435,448
385.5 4,435,450

CLASS 428

15 4,435,451
17 4,435,452
35 4,435,453
36 4,435,454
4,435,455
4,435,456
58 4,435,457
65 Re.31,533
91 4,435,458
95 4,435,459
129 4,435,460
141 4,435,461
156 4,435,462
158 4,435,463
167 4,435,464
195 4,435,465
215 4,435,466
254 4,435,467
285 4,435,468
4,435,469
294 4,435,470
320.8 4,435,471
333 4,435,472
378 4,435,473
391 4,435,474
409 4,435,475
412 4,435,476
462 4,435,477
463 4,435,478
542.8 4,435,479
548 4,435,480
550 4,435,481
553 4,435,482
566 4,435,483
693 4,435,484
694 4,435,485

CLASS 429

1 4,435,486
70 4,435,487
191 Re.31,532
212 4,435,488

CLASS 430

17 4,435,489
45 4,435,490
49 4,435,491
58 4,435,492
87 4,435,493
122 4,435,494
218 4,435,495
285 4,435,496
288 4,435,497
318 4,435,498
350 4,435,499
419 4,435,500
434 4,435,501
489 4,435,502
548 4,435,503

CLASS 431

7 4,435,148
12 4,435,149
46 4,435,150
90 4,435,151
170 4,435,152
208 4,435,153
328 4,435,154
4,435,155
359 4,435,156

CLASS 432

30 4,435,157
58 4,435,158
106 4,435,159

CLASS 433

9 4,435,160
132 4,435,161

CLASS 434

215 4,435,162
263 4,435,163
337 4,435,164

CLASS 435

7 4,435,504
34 4,435,505
189 4,435,506
262 4,435,507
284 4,435,508

CLASS 436

518 4,435,509

CLASS 441

130 4,435,165

CLASS 453

33 4,435,840
180 4,435,841
181 4,435,842
205 4,435,843
218 4,435,844
228 4,435,845
253 4,435,846
260 4,435,847
327 4,435,848
601 4,435,849
606 4,435,850

CLASS 464

172 4,435,166

CLASS 494

16 4,435,167
20 4,435,168
4,435,169

CLASS 500

21 4,435,588

CLASS 501

22 4,435,511
32 4,435,512
90 4,435,510
96 4,435,513
117 4,435,514

CLASS 502

22 4,435,311
65 4,435,515
71 4,435,516
74 4,435,517
101 4,435,313
107 4,435,518
4,435,519
4,435,520
154 4,435,314
157 4,435,312
209 4,435,521
319 4,435,522

CLASS 521

51 4,435,523
65 4,435,524
92 4,435,525
107 4,435,526
173 4,435,527

CLASS 523

332 4,435,528
426 4,435,529
512 4,435,530

CLASS 524

37 4,435,531
92 4,435,532
106 4,435,533
292 4,435,534
365 4,435,535
378 4,435,536
391 4,435,537
492 4,435,538
558 4,435,539
780 4,435,540

CLASS 525

64 4,435,541
118 4,435,542
143 4,435,543
146 4,435,544
344 4,435,545
418 4,435,546
420 4,435,547
451 4,435,548
504 4,435,549

CLASS 526

73 4,435,550
101 4,435,551
140 4,435,552
201 4,435,553
229 4,435,554
261 4,435,555
317 4,435,556

CLASS 528

45 4,435,558
73 4,435,559
170 4,435,560
193 4,435,561
272 4,435,562
493 4,435,337

CLASS 536

18.1 4,435,563
87 4,435,564

CLASS 542

416 4,435,565

CLASS 544

117 4,435,566
165 4,435,567
182 4,435,568
280 4,435,569
4,435,570
384 4,435,571

CLASS 546

228 4,435,572
250 4,435,573
321 4,435,574
341 4,435,575

CLASS 548

164 4,435,576
221 4,435,577
309 4,435,578
473 4,435,323

CLASS 549

12 4,435,579
248 4,435,580
4,435,581
352 4,435,582
414 4,435,583
415 4,435,584
446 4,435,585
464 4,435,586

CLASS 556

410 4,435,587

CLASS 560

48 4,435,589
61 4,435,590
73 4,435,591
91 4,435,592
119 4,435,593
205 4,435,594
234 4,435,595

CLASS 562

481 4,435,596
506 4,435,597
546 4,435,598

CLASS 564

433 4,435,599
464 4,435,600

CLASS 568

430 4,435,601
470 4,435,602
701 4,435,603
854 4,435,604
878 4,435,605

CLASS 585

324 4,435,606
443 4,435,607
480 4,435,608
670 4,435,609

CLASS 604

4 4,435,170
49 4,435,171
174 4,435,174
177 4,435,175
190 4,435,176
263 4,435,177
365 4,435,178
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	241	272,865		28	272,881	D12—	108	272,898		147	272,913		139	272,929		36	272,945
	309	272,866		70	272,882		141	272,899	D16—	32	272,914		144	272,930		67	272,946
	400	272,867		104	272,883		211	272,897		130	272,915		148	272,931	D25—	1	272,947
D3—	41	272,868		321	272,884		317	272,900		132	272,916		157	272,932		38	272,948
	73	272,869		333	272,885	D13—	8	272,901	D19—	78	272,917		166	272,933		92	272,949
	76	272,870	D8—	380	272,886		23	272,902	D20—	1	272,918		207	272,934	D27—	38	272,950
D6—	5	272,871		395	272,887		40	272,903	D21—	24	272,919		228	272,935			272,951
	16	272,872	D9—	352	272,888	D14—	30	272,904		37	272,920			272,936	D28—	89	272,952
	26	272,873		370	272,889		53	272,905		48	272,921		230	272,937	D32—	2	272,953
	86	272,874	D11—	55	272,890		58	272,906		52	272,922	D22—	1	272,938	D34—	21	272,954
	89	272,875		78	272,891			272,907		55	272,923		22	272,939		34	272,955
	205	272,876		125	272,892		77	272,908		59	272,924	D23—	1	272,941		37	272,956
	209	272,877		158	272,893		90	272,910		74	272,925		01	272,940	D92—	31	272,957
D7—	6	272,878			272,894	D15—	28	272,909		91	272,926		23	272,942	D99—	25	272,958
	21	272,879			272,895		127	272,911		92	272,927	D24—	29	272,943			

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